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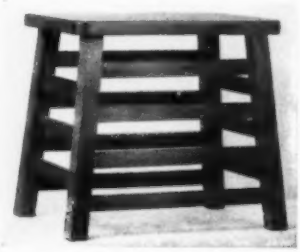

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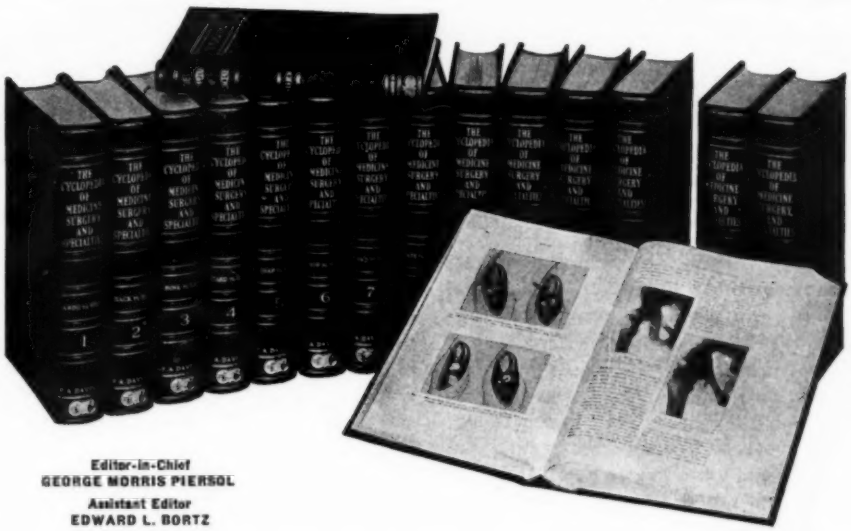

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(1) 1811. The Art of Preserving. M. Appert, Black, Parry and Kinsbury, London.
(2) 1937. The Canning Clan. E. C. May, The Macmillan Co., New York.
(3) 1937. Appertizing. A. W. Bitting, The Trade Pressroom, San Francisco.
(4) 1940. The National Geographic Magazine, November, p. 659.

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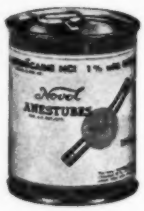

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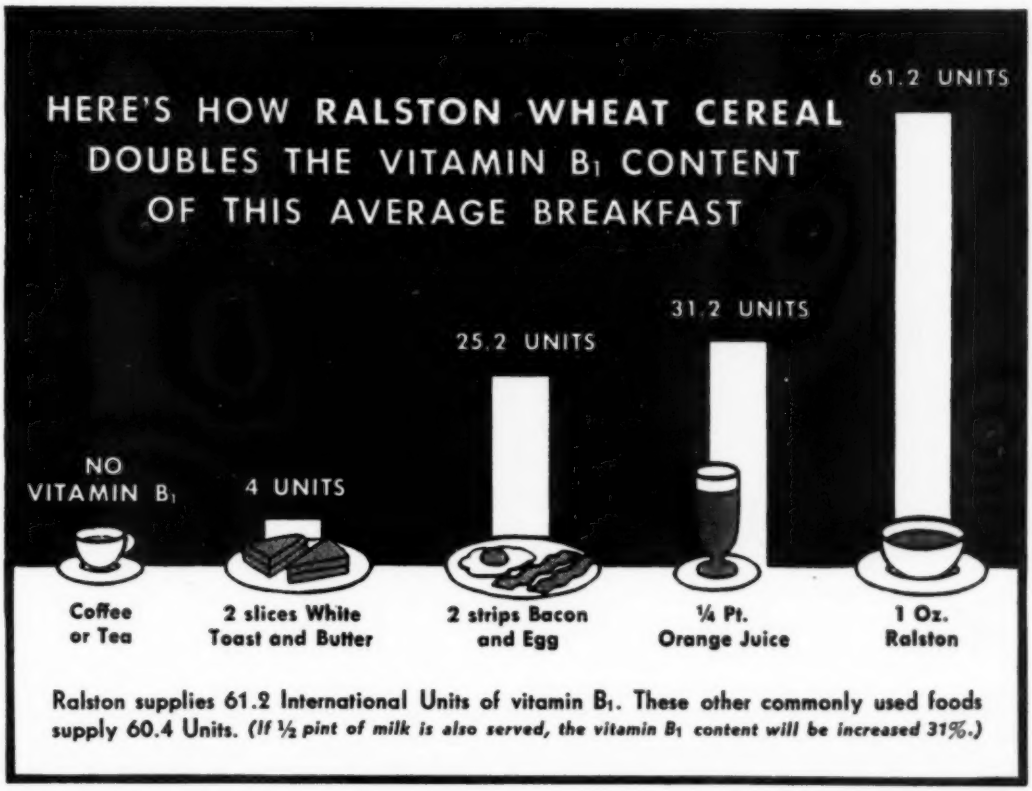
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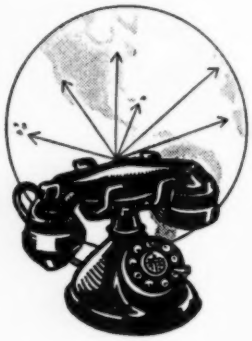

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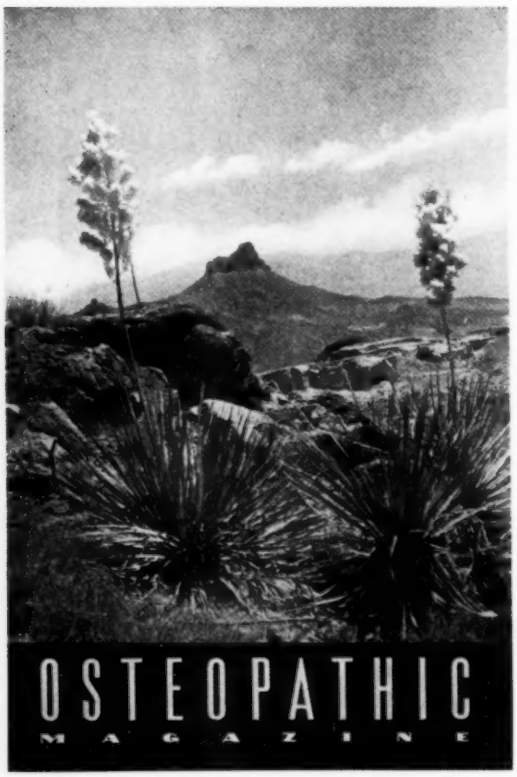
By Andrew T. Still, D.O.

A reprint in part of an article written by Dr. Still at the request of the editors of *The Ladies Home Journal* in 1908, of interest to new-comers, as well as those already acquainted with osteopathy since it bears the stamp of authority of its founder.

OPPORTUNITIES FOR WOMEN IN OSTEOPATHY

By Georgia B. Smith, D.O.

An article useful for student recruiting written by a former President of the O.W.N.A. pointing out that osteopathic colleges always have welcomed women and showing what osteopathy has to offer them as a profession.



MARCH COVER

HOW "PHOG" ALLEN DOES IT

By Elizabeth Fraser

The highlights of a recent story about Dr. Forrest C. Allen, father of basketball coaching, which appeared in a recent issue of *The Saturday Evening Post*, with direct quotations of interest to athletes and coaches showing how "Phog" Allen keeps his championship players in trim.

WHERE THERE'S A WILL . . .

A story in pictures illustrating how a student at the Philadelphia College of Osteopathy is obtaining his osteopathic education while managing at the same time to support himself and his family of five.

A GOOD START MEANS EVERYTHING

By Fred M. Still, D.O., F.A.C.N.

A discussion of the necessity for establishing proper mental habits in children so as to prevent unhappiness and maladjustments later in life.

ANGINA PECTORIS AND ITS MANIPULATIVE TREATMENT

By R. H. Singleton, D.O.

The author describes the conditions under which attacks of angina arise, and shows how manipulative measures may be used to relieve the strain on the heart, both during an attack and as a preventive measure.

NIGHT BLINDNESS AND VITAMIN A

By J. Leland Jones, D.O.

A discussion of night blindness as a symptom and the role of vitamin A in alleviating it.

SNAKES ALIVE!

By Ivan L. Clark, D.O.

An account of a most unusual sporting event which takes place every spring in Oklahoma—a rattlesnake round-up—in which the author was both a participant and in charge of first aid.

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Cancer—A Public Health Problem*

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National Cancer Institute, National Institute of Health,
United States Public Health Service,
Bethesda, Md.

The first organized public health programs were formulated during the middle of the nineteenth century. During the remainder of that century public health activities were limited almost entirely to the quarantine of patients with diphtheria, scarlet fever, and smallpox, and to the abatement of nuisances. Many discoveries after 1890 shed light on infection and communicable diseases. The unfolding of new information during the last decade of the nineteenth century and the first decade of the twentieth, was more rapid than it ever had been before; and this newly acquired knowledge had to be interpreted and administrative practices had to be developed to make the best use of the new procedures. Death rates from diphtheria, typhoid fever, and tuberculosis were lowered considerably during these years of rapid progress, and infant mortality and general death rates began to fall.

Early public health measures were designed to check the spread of infection, and workers in public health before 1910 were concerned chiefly with environmental sanitation and quarantine of patients with communicable disease. However, a new emphasis was beginning to develop, namely, the focusing of attention on the individual and his resistance to disease.

Among the newer activities being undertaken by health departments as interest in the individual increases are the conduct of prenatal clinics, heart clinics, and mental hygiene clinics. We are now witnessing further progress as public health workers look for a solution to problems of nutrition, housing, and environment.

The combined death rate from diarrhea, enteritis, typhoid fever, scarlet fever, diphtheria, and tuberculosis has fallen from 430 per 100,000 in 1900 to less than 80 in 1939, representing an annual saving of over 430,000 lives. There has been little change in death rates of the population groups over 55 years of age in spite of the fact that the death rate from all causes has been halved since 1900. With the reduction of death rates in the younger groups there has come a corresponding increase in life expectancy at birth. An example of this is the fact that the average newborn baby in Massachusetts could expect to live 34½ years in 1789, 46 years in 1901, and over 59 years in 1930.

The average age of the population has gradually become greater. In 1880, 21.6 per cent of the white population of the United States were over 40 years of age. In 1930 this group had increased to a total of 30.2 per cent, and it is estimated conservatively that the number will increase to 42 per cent by 1960 with some increase in total population.

Cancer is a disease primarily affecting people over 40 years of age. Because of this and because there has been a shift in age composition in the population to the higher age groups, we are not surprised when we note that the cancer death rate has risen from 68 per 100,000 in 1900 in the 10 original registration States to 121 per 100,000 in the same States in 1935. Unless there is more universal application of the present knowledge of the control of cancer, it is not unreasonable to estimate that by 1960, 225,000 persons will die from cancer each year instead of a number equal to the 150,000 who died last year.

Detailed incidence studies show marked site difference in the regional, sex, and color distribution of cancer. Analysis of data collected by the United States Public Health Service[1, 2, 3] shows that the reported total incidence of cancer in the South is approximately 4 cases per death from cancer compared with approximately 2.8 in the remainder of the country. Repeated in terms of white population only, the rate is 5.7 cases per death in the South compared with 2.8 in the remainder of the country. When the site distribution of reported cases was studied, it was discovered that skin cancer made up over 35 per cent of the cases in the white population of the South compared with less than 25 per cent in the remainder of the country.

Using only Atlanta and Chicago data, it was found that skin cancer made up 38.5 per cent of all cancer in white males in Atlanta and only 12.5 per

*Delivered before the General Sessions at the Forty-Fourth Annual Convention of the American Osteopathic Association, St. Louis, June 27, 1940.

cent in white males in Chicago. The corresponding percentages for females were 23.1 per cent in Atlanta and 6.9 per cent in Chicago. In the case of carcinoma of the gastrointestinal tract, there was found to be almost a complete reversal of percentages mentioned for skin cancer, the North reporting nearly three times as much as the South.

The differences indicated serve to emphasize a few of the complexities of the cancer problem. While surgery, roentgen ray, and radium therapy used separately or in combination to treat early cancer offer some hope for aiding the reduction of mortality from cancer, it is to fundamental scientific research that we must look for the real defense against this relentless foe.

Increased knowledge of the causal genesis of cancer should give us information on how cancer may be prevented. It is unlikely that we will advance very far in the development of new curative procedures until we have a better understanding of the causes and development of cancer.

There is no justification for doing little or nothing for the present-day cancer patient while we await the discoveries that will ultimately come. The control of cancer is unique in many ways. Cancer must be detected early if the patient is to have a reasonable chance for cure. It has been estimated[1] that when cancer is permitted to advance from early to late stages without adequate care, chances for cure decreases from 75 to 20 per cent in cancer of the breast; from 80 to 10 per cent in cancer of the body of the uterus and cervix; from 80 to 20 per cent in lesions of the mouth; and from 95 to 30 per cent in cancer of the skin.

Many of the patients seeking care have advanced disease when they first visit their physicians. Patients with carcinoma of the esophagus, stomach, and lung are usually doomed to die from their disease even though they seek care soon after first signs and symptoms appear, because such tumors frequently are advanced before they cause initial symptoms. Many patients do not seek care because they are ignorant of the importance of the early warning signs and symptoms of disease. Others, realizing that they have suspicious symptoms and lesions, do not seek care because they are afraid they do have cancer and don't want to face this fact, chiefly because they think that cancer is incurable.

The patient is not always responsible for delay in treatment because sometimes the physician fails to be suspicious and to recognize cancer when the patient comes early. We cannot be critical of this when we realize that the average physician sees only two or three patients with cancer each year and that cancer may imitate a host of diseases.

Education of the laity in the early signs, symptoms, and curability of cancer, and the need for periodic physical examinations is necessary. Postgraduate education and refresher courses should be made available to practicing physicians.

Our present weapons for treating cancer are surgery, roentgen rays, radium, or combinations of them. The care of the cancer patient is complicated by the fact that it must be individualized. This means that unless a physician has had good training and a wealth of experience he is not in a position to take care of very many of the cancer patients who may present themselves to him. Accordingly, the cancer patient must be referred to specialists for diagnosis and treatment.

The remark was made by Ewing and Greenough[5] over ten years ago that cancer care "is no longer a one man job." Teamwork is necessary in the care of cancer patients. The surgeon, the radiologist, and the histopathologist, aided by specialists in allied fields, must examine the patient in order to make a diagnosis and to decide on the proper balance of therapy.

The fact that surgery, roentgen ray, and radium therapy are our only weapons in fighting cancer makes the care of the individual cancer patient very costly, hence many hospitals and clinics are not in a position to handle all of the indigent patients who come to them or who might be sent if the control program were intensified. This means that there must be public support of existing clinics and public aid to create additional needed clinics in existing hospitals if we are to reduce the number of deaths caused by cancer.

We know that early cancer is curable, that there are over 500,000 cases with over 150,000 deaths per year and that care is often beyond the ability of the patient to purchase. This should make us realize that a cancer program should be a part of every well-balanced general public health program.

How can we attack the problem with our present weapons? This can be done by coordinating all present facilities and resources for treating cancer and by supplementing them with new ones. In the field of lay education the American Society for the Control of Cancer and its Women's Field Army are doing notable work. National and state organizations of physicians have cancer committees and these groups study local cancer problems and organize refresher courses for their fellow workers.

In view of the scope of the cancer problem, it is evident that some permanent official health agency must direct the effort of coordination and administer the program of aid to needy patients. The logical and best place for the cancer control program is in the state health department. New York was the first state to develop a cancer program. This occurred in 1898. At first the only activity was research, but gradually care for patients was provided. Massachusetts was the second state to organize a program. This occurred in 1926. There are now nine states with cancer control laws, namely: Connecticut, Georgia, Illinois, Missouri, New Hampshire, New York, North Carolina, South Carolina, and Vermont. In addition, seventeen other states† are carrying on some phase or phases of a cancer control program.

A well-rounded state program includes lay education, professional education, free tissue diagnostic service for indigent patients, free diagnostic and treatment facilities for indigent patients, and statistical and epidemiological research.

On August 5, 1937, there was established by an Act of Congress, a National Cancer Institute in the United States Public Health Service. The Institute is one of the units of the new National Institute of Health in Bethesda, Maryland.

In accordance with the law, research is conducted relating to the cause, prevention, and methods of diagnosis and treatment of cancer. A large group of scientists and their technical assistants representing

†Author's note: On October 1, 1940, the total number of states with programs had risen to 32.

biochemistry, biophysics, cytology, histopathology, biology, genetics, and related fields are at work in the Institute on fundamental research problems relating to cancer.

A model tumor clinic has been developed in the U. S. Marine Hospital in Baltimore, Maryland, in order to give adequate care to the regular beneficiaries of the United States Public Health Service east of the Mississippi River and to carry out clinical research.

Nine and one-half grams of radium were purchased and loaned to forty-six private hospitals scattered over the entire country.

Training fellowships have been provided for over forty physicians for instruction in technical matters relating to the diagnosis and treatment of cancer in institutions which have set up one to three year training courses. These men enter private practice when they complete their work, and it is hoped that they will help raise the general level of care and knowledge of diagnosis and treatment of cancer in the communities to which they go.

Numerous grants-in-aid have been given to private institutions for the conduct of cancer research projects.

There has been cooperation with the American Society for the Control of Cancer and a sound motion picture showing cancer research and dramatizing the cure of cancer, entitled "Choose to Live," has been produced.

The scope of the cancer problem from the standpoint of morbidity and mortality has been emphasized. The costliness and special problems in its care have been stressed. The realization that many people now die because adequate care is not available to them and that an additional 25,000 or more lives could be saved each year through the more nearly universal use of present methods of diagnosis and therapy, should make us appreciate the need for intensifying the anti-cancer program in the entire country instead of waiting until research finally solves the problem for us. One of the states with a good program is pointing with pride to the fact that there has been a decrease in cancer mortality in its female population during the last five years[6].

When programs with similar objectives are established in all states, then and only then will cancer patients receive the care and opportunity for additional years of life.

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The Relation of Structural Disturbances to Irritable Colon ("Colitis")

(A Preliminary Analytical Study)

RALPH F. LINDBERG, D.O., Director of Staff, Chicago Osteopathic Hospital,
W. FRASER STRACHAN, D.O., Professor of Anatomy, Chicago College of Osteopathy,
and
WILSON O. KOEHNLEIN, Statistician
Chicago

This preliminary analytical report is made from a study of a series of cases drawn at random from the records of the Diagnostic Service* at the Chicago Osteopathic Hospital.

The patients on the Diagnostic Service are referred to the hospital for detailed case analysis. They are hospitalized for as long as is necessary to make a very thorough diagnostic study. A part of the study is a detailed structural analysis made by a member of the Technic Department of the Chicago College of Osteopathy, who makes his examination *without knowledge of the clinical story or of any other reports.* The object is to have his findings made without bias, and this fact should be kept in mind in interpreting the conclusions of our analysis.

In this structural study is included a spinal examination, the lesions of the pelvis, the vertebral column, and the ribs, being recorded and classified according to the form established by the Technic Department. A report is made on palpatory findings as to (1) the position of each lesioned vertebra in relation to the vertebra below; (2) the mobility of the articulation, graded from zero (no restriction) to the maximum amount of restriction indicated as minus 3; (3) the amount of tissue resistance of the periarticular structures, graded from zero (normal resistance) to a maximum of plus 3; (4) tenderness of the structures about the lesion, graded from zero (no tenderness) to a maximum of plus 3. In this study there is no attempt to classify the vertebral lesions as primary or secondary.

All types of conditions come to this service for examination. For the purpose of this analysis, 468 cases were drawn from the files. They were selected at random except for the specification that there should be included at least 100 cases with a diagnosis of "colitis." Of the original 468 cases, a total of 119 were rejected for various reasons, of which the chief ones were: (1) The case report did not include the structural examination described above; (2) the lesions were not correlated with a measure of tissue resistance; (3) diagnosis showed only mental disorder; (4) diagnosis reported nothing except osteopathic lesions; (5) diagnosis was deferred.

*This Service was under the supervision of J. Stedman Denslow, D.O., during the time when part of the case analyses were made.

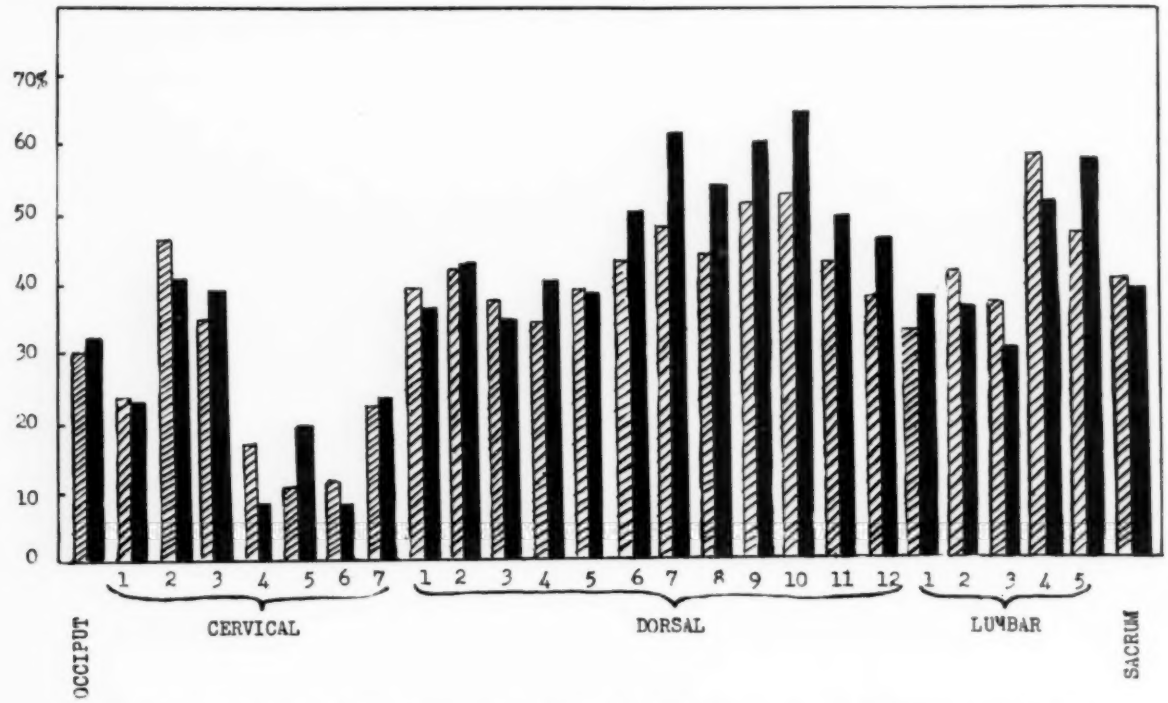

Fig. I.—Pattern showing the general distribution of lesions in the colitis (black columns) and the noncolitis (shaded columns) groups. Both groups showed a high incidence at the second and third cervical vertebrae, another peak in the lower thoracic, and still another at the fourth and fifth lumbar.

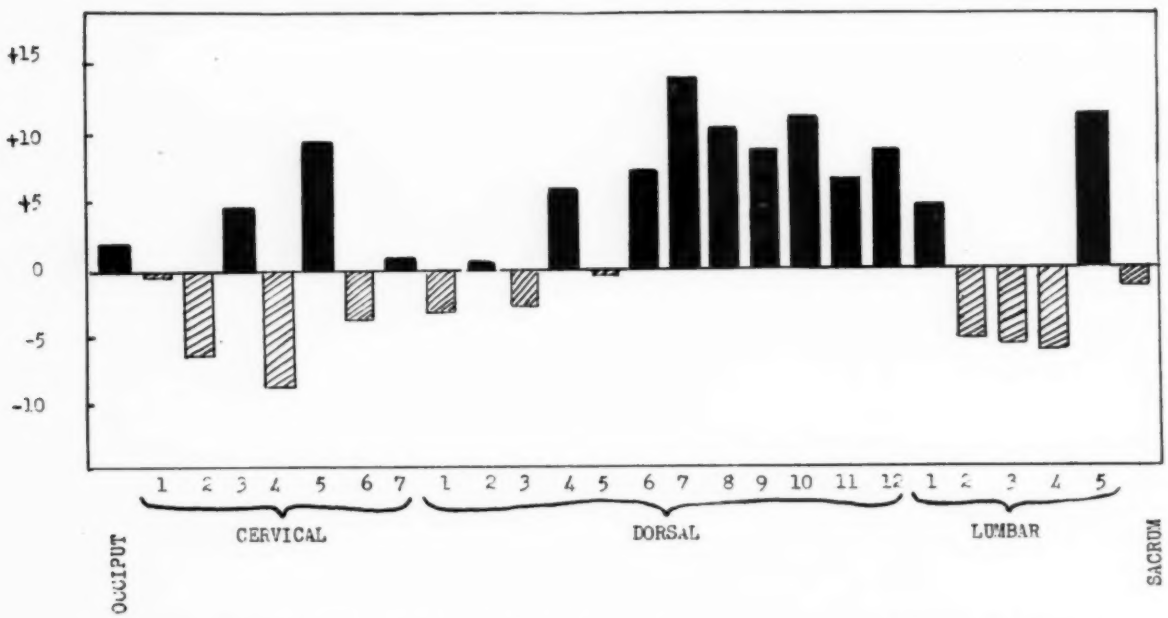

Fig. II.—Pattern showing differences (plus and minus) between the per cent of colitis cases and the per cent of noncolitis cases showing lesions in the specified regions. Fourteen of the twenty-six segments give negative or very small positive differences. In over half the segments the colitis cases show no significant higher frequency of lesions than the noncolitis cases. Of the twelve segments showing significant positive differences, eight are grouped consecutively in the region from the sixth thoracic to the first lumbar.

This left 349 cases divided into two groups. The first group included all cases in which "colitis" in any form was listed specifically in the final diagnosis, either alone or in connection with other disorders. The second group of 237 included all case histories in which colitis was not listed in this diagnosis. It represents a random group of illnesses.

Of the 112 cases of "colitis," only 6 were diagnosed as colitis unassociated with other disorders. All the other cases presented combinations of "colitis," with gall-bladder dysfunction, appendicitis, etc. The entire group includes the cases commonly diagnosed as spastic colitis or mucous colitis, although the term, "irritable colon," seems to us to describe the condition better. However, throughout this paper we shall use the more common expression, "colitis." The 112 cases included only those which, after x-ray and sigmoidoscopic examination, showed no demonstrable evidence of specific, organic pathology of the bowel. Otherwise, every case was included which had intestinal symptoms of flatulence, pain, diarrhea or constipation, and nervousness, which on x-ray examination showed deviations from the normal in size and motility of the colon, and areas of spasticity or loss of haustrations.

Thus the following analysis is designed to set forth in quantitative terms the relation of the osteopathic articular lesion to a specific disorder. For the purpose of this analysis, an osteopathic articular lesion is defined as "any alteration in the anatomical or physiological relationships of the articular structures, resulting in local or remote functional disturbance."[1]

Clinical experience has shown that a simple tabulation of the occurrence of lesions in colitis cases would not differentiate this from other disorders. The relation is not of a simple lesion of one segment for one disease. For instance, a lesion of the tenth thoracic is not invariably associated with any one disorder. It may be associated with appendicitis, pyelitis, colitis, or cholelithiasis, etc.

It was necessary, for the purpose of analysis, to take an additional step if we wished to have a measure of the true relation between structural disturbance and visceral pathology. The final result proves to be a pattern or "profile" (to adopt a word used by Professor L. L. Thurstone of the University of Chicago) of colitis cases that distinguishes them collectively from other cases on the basis of the frequency of occurrence of given osteopathic lesions.

This "profile" (shown numerically and graphically) is the desired quantitative statement of the relation of the osteopathic articular lesion to colitis. In this study the two groups were handled separately although identical analytical treatment was given both. This procedure offered the basic comparison between colitis cases and noncolitis cases with respect to the frequency of occurrence of lesions in various regions. Case by case the lesions were reported in the pelvis, the spinal column, and the ribs, and were tabulated. When summarized this tabulation gave the two basic numerical series:

1. The per cent of *noncolitis* cases showing lesions in specified regions.

2. The per cent of *colitis* cases showing lesions in corresponding regions.

TABLE 1—PER CENT OF CASES HAVING SPECIFIED LESIONS

LESION	COLITIS (112 Cases)	NONCOLITIS (237 Cases)	DIFFERENCE
Occiput	32.1 per cent	30.4 per cent	1.7
1 Cervical	23.2	23.6	—0.4
2	40.2	46.4	—6.2
3	39.3	35.0	4.3
4	8.0	16.9	—8.9
5	19.6	10.5	9.1
6	8.0	11.8	—3.8
7	23.2	22.4	0.8
1 Thoracic	36.6	39.7	—3.1
2	42.9	42.6	0.3
3	34.8	37.6	—2.8
4	40.2	34.2	6.0
5	39.3	39.7	—0.4
6	50.9	43.9	7.0
7	62.5	48.5	14.0
8	54.5	44.3	10.2
9	60.7	51.9	8.8
10	64.3	53.2	11.1
11	50.0	43.5	6.5
12	47.3	38.4	8.9
1 Lumbar	38.4	33.8	4.6
2	36.6	41.8	—5.2
3	31.3	37.1	—5.8
4	51.8	58.2	—6.4
5	58.0	46.8	11.2
Sacrum	39.3	40.5	—1.2

Table I shows the general distribution of lesions in the two groups. The frequencies are expressed as the per cent of cases in each group showing the given lesion; that is, 32.1 per cent of colitis cases and 30.4 per cent of noncolitis cases had an occipital lesion.

Both the colitis and the noncolitis groups showed the same general pattern. That is, both groups showed a high incidence at the second and third cervical vertebrae, another peak in the lower thoracic, and still another at the fourth and fifth lumbar. This pattern is illustrated in Fig. 1.

So far as this study is concerned, it would appear that there is a higher incidence of lesions of the fourth and fifth lumbar, lower thoracic, and upper cervical in all patients. The question whether or not a similar pattern of incidence of spinal lesions may be found in supposedly normal individuals awaits a study of healthy individuals.

Table I also shows the specific profile of the colitis cases. Since the disorder common to all the cases in the second group is *colitis*, it is believed that the higher per cent of lesions in, for instance, the tenth thoracic in this group as against the noncolitis group is significant and is attributable to a relation between colitis and the lesions in that region. The figures (plus and minus) represent the difference between the per cent of colitis cases and the per cent of noncolitis cases showing lesions in the specified regions. For example, 32.1 per cent of the colitis cases show occipital lesions, and 30.4 per cent of the noncolitis cases show similar lesions. The difference (1.7) is, of course, the excess of colitis over noncolitis.

Fourteen of the twenty-six segments shown in this table give negative or very small positive differences. It follows that in over half the segments the colitis cases show no significant higher frequency of lesions than the noncolitis cases. Of the twelve segments showing significant positive differences, eight are grouped consecutively in the region from the sixth thoracic to the first lumbar. This is the typical high frequency pattern or "profile" of colitis cases. This is illustrated in Figure II.

TABLE 2—FREQUENCY OF OCCURRENCE OF SPECIFIED LESIONS IN COLITIS AND NONCOLITIS CASES

Lesion	COLITIS (112 Cases) No.	Pct.	PE*	NONCOLITIS (237 Cases) No.	Pct.	PE*	DIFFERENCE IN FREQUENCIES Diff.	PE**
Occiput	36	32.1	2.974	72	30.4	1.969	1.7	3.569
1 Cervical	26	23.2	4.077	56	23.6	2.826	—0.4	4.925
2	45	40.2	3.124	110	46.4	2.185	—6.2	3.813
3	44	39.3	3.113	83	35.0	2.093	4.3	3.584
4	9	8.0	1.632	40	16.9	1.712	—8.9	2.304
5	22	19.6	2.529	25	10.5	1.343	9.1	2.871
6	9	8.0	1.632	28	11.8	1.413	—3.8	2.160
7	26	23.2	2.691	53	22.4	1.826	0.8	3.257
1 Dorsal	41	36.6	3.070	94	39.7	2.143	—3.1	3.744
2	48	42.9	3.165	101	42.6	2.171	0.3	3.827
3	39	34.8	3.036	89	37.6	2.120	—2.8	3.557
4	45	40.2	3.124	81	34.2	2.079	6.0	3.743
5	44	39.2	3.113	94	39.7	2.143	—0.4	3.779
6	57	50.9	3.186	104	43.9	2.172	7.0	3.857
7	70	62.5	3.095	115	48.5	2.189	14.0	3.783
8	61	54.5	3.174	105	44.3	2.177	10.2	3.848
9	68	60.7	3.113	123	51.9	2.189	8.8	3.806
10	72	64.3	3.049	126	53.2	2.188	11.1	3.750
11	56	50.0	3.186	103	43.5	2.172	6.5	3.856
12	53	47.3	3.182	91	38.4	2.130	8.9	3.829
1 Lumbar	43	38.4	3.099	80	33.8	2.072	4.6	3.729
2	41	36.6	3.070	99	41.8	2.161	—5.2	3.754
3	35	31.3	2.955	88	37.1	2.115	—5.8	3.635
4	58	51.8	3.176	138	58.2	2.159	—6.4	3.847
5	65	58.0	3.146	111	46.8	2.186	11.2	3.830
Sacrum	44	39.3	3.113	96	40.5	2.152	—1.2	3.783

*Based on the formula: the probable error in the observed probability, p, equals 0.6745 times the square root of pq/n.

**Based on the formula: the probable error in the difference between two single observations equals 0.6745 times the square root of the sum of the standard deviations (squared) of the observations.

Table II lists the probable errors of the lesion frequencies. The segments are listed, the per cent of occurrence of lesions, and the probable error. The probable error for the difference in frequencies is also tabulated. This is the probable error in the colitis profile. It appears that the occurrence of intervertebral lesions of the seventh, eighth, and tenth thoracics and the fifth lumbar become very significant in colitis.

Table III shows the analysis of tissue change in the lesions reported in colitis cases. Again, the regions of greatest tissue resistance appear in the regions of greatest incidence of occurrence as a rule. The probable error, however, is too large to permit many conclusions based on this analysis.

Table IV lists the number of lesions for each case. The average appears to be high. This is probably due to the attempt to make a very detailed analysis, and to the fact that no distinction was made between primary and secondary lesions. With these facts in mind, the average of approximately eleven regions of tissue change in the colitis case is not too great.

A previous investigator, Long,[2] has charted the incidence of restricted motion in spinal segments as related to certain disorders. He gives a profile for colitis cases which is significantly different from ours. His highest peak is at the second cervical with thoracic peaks at the fourth and twelfth and a low incidence at the eighth. The lumbar peak is the same in the two studies, being high at the fifth.

The difference in the two studies is probably due to the fact that Long based his incidence on the finding of restricted motion alone, while the analysis of lesion pathology used in this study is based primarily on tissue change. The high incidence of lesions in the lower thoracic segments is therefore, probably due to the mass effect of viscerosomatic impulses.

TABLE 3—ANALYSIS OF TISSUE RESISTANCE IN THE LESIONS REPORTED IN COLITIS CASES*

	NUMBER OF CASES WITH SPECIFIED TISSUE RESISTANCE				CASES WITH TR OF	TOTAL CASES		PER CENT WITH TR
	0†	1	2	3	2 or 3			2 or 3
Occiput	—	—	19	16	—	16	35	45.6 pct.
1 Cervical	1	1	8	15	—	15	24	62.6
2	—	—	29	18	—	18	47	38.3
3	—	2	27	15	1	16	45	35.5
4	—	—	5	4	1	5	10	50.0
5	—	1	11	11	—	11	23	47.7
6	—	—	5	4	—	4	9	44.5
7	—	—	11	12	—	12	23	52.1
1 Dorsal	1	—	19	19	—	19	39	48.7
2	2	1	16	26	1	27	46	58.5
3	4	1	16	16	—	16	37	43.2
4	2	2	16	17	4	21	41	51.0
5	2	—	18	16	4	20	40	50.0
6	3	—	22	25	2	27	52	51.8
7	3	1	18	34	6	40	62	64.7
8	6	1	22	24	4	28	57	49.1
9	2	1	28	26	5	31	62	50.0
10	5	3	34	21	4	25	67	37.3
11	3	2	21	21	5	26	52	50.0
12	1	2	24	18	4	22	49	45.1
1 Lumbar	—	2	23	13	3	16	41	39.0
2	1	1	21	15	2	17	40	42.5
3	2	2	16	12	3	15	35	42.7
4	1	2	34	20	3	23	60	38.3
5	—	2	18	40	6	46	66	69.8
Sacrum	—	1	24	17	1	18	43	41.8

*IMPORTANT NOTE! This table is included only as an example of a type of procedure. The probable error, for example, of the percentage for the sixth cervical is 11.13, making true differences in percentages highly uncertain. With a greater number of cases the percentages might show a significant story of concentration of tissue resistance in critical areas.

In any event, irregularities which developed in the tabulation of this set of data makes it necessary to use this table with caution.

†Not specified.

TABLE 4—NUMBER OF LESIONS REPORTED PER COLITIS CASE

NUMBER OF INDIVIDUAL LESIONS REPORTED	NUMBER OF CASES WITH GIVEN NUMBER OF LESIONS
0	—
1	—
2	—
3	1
4	2
5	6
6	11
7	12
8	9
9	16
10	
10.9 average per case	
11	11
12	10
13	7
14	8
15	9
16	5
17	—
18	1
19	1
20	2
21	—
22	1
Total	112

CONCLUSIONS

1. Analysis of the occurrence of lesions shows a typical distribution along the spinal column, regardless of the specific disorders involved. The general appearance of this distribution is the same for colitis cases and for the "all other" noncolitis cases grouped together.

2. The occurrence of lesions in colitis cases closely parallels this typical distribution down to the sixth thoracic. From the sixth thoracic to the first lumbar, inclusive, however, the colitis cases show a significant-

ly greater frequency of occurrence than do the noncolitis cases.

3. Statistical calculations prove that the frequencies of lesion occurrence derived from 349 cases place the results beyond the likelihood of being seriously affected by chance and error. The probability, for example, that the difference in frequency of lesions in the tenth thoracic between colitis and noncolitis cases is due to chance, is less than four to 100.

QUALIFICATIONS AND RECOMMENDATIONS FOR FURTHER ANALYSIS

The chief logical qualifications of the present study will be recognized:

1. The general profile, used as a control series, is itself an unknown quantity. It involves a number of disorders brought together in a random fashion.

2. The colitis profile also contains an element of randomness. The colitis cases involve a number of associated disorders which presumably are not added in exactly the same proportion to the noncolitis group.

3. While the general profile serves to subtract randomness from the colitis group in a more or less satisfactory way, the basic comparison is still between colitis and a profile of *other disorders,* which constitutes a confused control series.

It will be recognized also that the present study is only a step in the direction of establishing (in numerical terms) the relation of a specific lesion pattern to colitis. On the basis of the present study, for example, it is not possible to suggest the lesion picture as an exclusive tool for diagnosis.

The following recommendations for further analysis are made to the end that correlations between a specific type of lesion picture and a given disorder may be developed through statistical analysis.

1. A general profile based on osteopathic examination of normal individuals (i.e., those without symptoms) should be set up as a simple direct control series.

2. Profiles of a number of important recognized disorders should be set up.

3. These individual profiles, based on the control profile of normal cases, should be based also on case histories showing only the specific disorder under examination.

4. Further exploratory analysis should be made to develop the form or outlines of a *specific* lesion pattern associated with specific disorders. Such exploration should be directed toward determining the *necessary and sufficient* lesion picture for each disorder analyzed.

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Structural and Dietetic Considerations of Arthritis*

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PART I—ETIOLOGY, PATHOLOGY AND DIAGNOSIS

Arthritis is a very interesting disease, particularly from the osteopathic point of view. Lowered resistance makes itself evident in almost every part of the body in this disease. The bones, muscles, nerves, and viscera all are affected. The cause and effect aspect of the osteopathic lesion is ever present. A thorough knowledge of body mechanics is required in diagnosing and treating arthritis.

Every living individual is a potential victim of arthritis and very few persons who live to middle life or beyond escape without suffering from the disease in one form or another.

Until recently there has been a common belief among the laity that little could be done for arthritis. As they are becoming more educated concerning the results obtained by osteopathic physicians, they are realizing that much can be done for the relief of the sufferer with arthritis and much more for its prevention.

OSTEOARTHRITIS (HYPERTROPHIC ARTHRITIS)

Osteoarthritis is a chronic degenerative disease with hypertrophic changes in the bone and cartilage, and sometimes thickening of the synovial membranes. It is the most common form of arthritis, but affects the patient less severely than some other forms, particularly the atrophic type which will be discussed later.

In the strict sense of the word it is not of infectious origin. It is regarded by many as a natural condition after an individual reaches a certain age. Consequently, senility is probably the most common predisposing factor in its etiology.

Granting the inevitable senile influence, there are a number of other factors which contribute to the cause of this form of arthritis.

Trauma should be considered second in etiological importance. It may be acute as in some violent injury to a particular joint or joints. However, it is more often chronic, as in a lesser injury, and acts in a slow, insidious, manner; it eventually causes the arthritic symptoms.

Most of the joints are specialized structures either for weight bearing or motion or both. Consequently they are subject to strain but when too great a load or too much work is constantly required of a particular joint something must give way. Such conditions are considered traumatic also and may be brought about in the following ways:

Constant or undue strain put upon some joint as a result of occupation is always an important factor. An example of this can be noted in men whose occupation requires lifting and carrying heavy objects or when certain joints are subjected to sudden intermittent strains or shocks as, for example, a man wielding a heavy sledge hammer.

*Delivered before the twentieth annual convention of the Eastern Osteopathic Association, New York City, March 30 and 31, 1940.

Editorial Note: Parts of the text dealing with classifications, descriptions of x-ray diagnosis, and differential diagnosis were omitted because such material was covered in the article which immediately follows by Eugene R. Kraus, D.O. Classification of arthritis was deleted at the beginning of the text. All other deletions in the text are indicated by periods.

Flat feet, which are devoid of the springiness which should exist in normal feet, permit intermittent shocks to various joints of the body while the person is walking or running. Overweight acts in a similar manner. It is commonly noted that hypertrophic arthritis develops earlier in life when the individual is overweight.

Faulty posture is of considerable importance and may contribute to a chronic traumatic inflammation in a joint. While recognizing that occupation, overweight, traumatic deformities, etc., may contribute to faulty posture, the congenital deformities must not be overlooked. Abnormalities, such as cervical or lumbar ribs, extra vertebrae and spina bifida often cause faulty posture through some abnormal strain. As an example of this, the bones of the legs are sometimes found to be of unequal length without any history of injury or disease to account for the difference. The asymmetry may be a sequel of some acute condition such as anterior poliomyelitis.

The truly normal spine probably does not exist, but if it does it is extremely rare. There are almost always found deviations from the theoretically normal anteroposterior curves and very often some slight scoliosis. In almost every one of these spines there are bound to be regions where the strain is much greater upon certain vertebral articulations than on others. Lloyd[1] has well termed these regions as "mechanical strain points." Subluxations or osteopathic joint lesions are the ultimate result unless the strain is relieved and hypertrophic degeneration is prone to start in this region.

One of the most common conditions causing scoliosis is a chronic sacroiliac subluxation. It is simple to visualize the result in the spine from a twisted pelvis. Until recent years the M.D. profession, refusing to recognize this lesion, had many failures in correcting scoliosis. In the minds of the public it rightly became an "osteopathic lesion" and we are pleased to say it has remained so.

As stated previously, hypertrophic arthritis is not considered strictly of infectious origin. However, it has been found that toxic conditions have a tendency to aggravate this type of arthritis and when some general or focal infection occurs during the course of the disease, the hypertrophic joint in which the resistance is lowered will evidence more severe arthritic symptoms. This naturally is true in any form of arthritis.

Much has been written about calcium deficiencies and calcium metabolism in all forms of arthritis. At the present it would seem that in hypertrophic arthritis the blame could be placed upon vitamin deficiencies rather than upon calcium irregularities. However, overeating is probably more important than either one in this type of the disease.

The onset of hypertrophic arthritis is insidious. The disease usually is established before the patient consults his physician. He has noticed a slight pain and stiffness in some joints for several months or even years. He may have been resigned to the fact that he was getting old and thought the symptoms were inevitable, although they might have started early in middle life or more specifically at the end of the fourth decade or the beginning of the fifth. The pain and stiffness gradually increase until there may be constant pain even when the joint is not in use. Any joint in the body may be affected; however, the most common are those in the fingers, knees, spine and hips. Crepitation is noticed frequently in this type of arthritis. There is seldom any noticeable swelling except in the joints of the fingers and practically never ankylosis.

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The blood shows very little, if any, pathological change in true hypertrophic arthritis. However, in the urine there are two abnormalities sometimes found which should receive some consideration. They are indican and pus. Excluding complications of various other diseases, the urine usually is otherwise normal. The rather heavy indican often found, might indicate that overeating and rich diets contribute to some extent to the condition. The presence of pus is not rare and may indicate some toxic influence in a small percentage of cases or more likely an association with the infectious type.

ATROPHIC (RHEUMATOID) ARTHRITIS

Atrophic or rheumatoid arthritis is a chronic disease of the joints with periarticular swelling, inflammatory changes in the synovial membrane, and atrophy of the bone. The stiffness produced by the inflammation hampers the patient considerably and the joints may become extremely painful. The disease is usually polyarticular and if allowed to progress may produce ankylosis.

The etiology is varied and not always clear. However, there are a number of predisposing and exciting causes which are conducive to its development. It usually attacks the slender undernourished type. It attacks comparatively few of the strong robust type.

Infection, while still questionable in the minds of some workers, is undoubtedly a very important factor in the etiology of this disease.

Rheumatoid arthritis frequently makes its appearance shortly after an acute infection, such as that from an open wound, a carbuncle, tonsillitis, influenza, sinusitis, typhoid fever, pneumonia or pyelitis. At present some form of streptococcus is considered the most common bacterial offender. The teeth, tonsils, throat, sinuses, gall-bladder, genitourinary tract, prostate, and female genital organs are all seats of possible focal infection which may contribute to the cause of the disorder.

Considering the throat, exclusive of the tonsils, as a focus of infection, Medel[2] last year made a most interesting report as follows: "There is frequently seen a hyperemic band of infected lymphoid material lying just medial to the posterior pillar of the tonsil and extending upward into the nasopharynx." He goes on to say that a very large percentage of people have it and he believes no one ever developed a streptococcic throat condition without this tissue being present. He also believes it has a more important bearing as a focus of infection than the teeth or tonsils. He reported a number of symptoms, including arthritic manifestations, completely subsiding after removal of this tissue. In a series of 133 patients in whose throats this tissue was present, cultures and smears were taken and all but fifteen showed hemolytic streptococci. He suggests that this tissue be looked for in some of the unexplained infections in arthritis.

The gastrointestinal tract, so often overlooked, probably plays a most important rôle in the etiology

of atrophic arthritis and a focal infection therein may be the chief causative factor.

Bassler[3] concludes that "spinal arthritis may result from intestinal toxemia."

Cecil[4] writes that some workers believe the large bowel may act as a focus of infection.

It has been suggested by others that the intestinal glands may become infected and act as foci. As constipation is present in so many cases of atrophic arthritis, a reasonable conclusion would be that the gastrointestinal tract is rarely innocent. This will be brought out later in discussing treatment. Several writers suggest that faulty metabolism of calcium, sulphur and other minerals, carbohydrates, and proteins is an important factor in the etiology. Others suggest that vitamin C deficiency is a factor. Whether it be metabolic or dietary, a large proportion of patients suffering with arthritis follow a rather unbalanced diet using very little of the green vegetables and fruits, but with meat and potatoes predominating.

Rheumatoid arthritis, like rheumatic fever, is seen less often in the warmer climates, which accounts for the belief that exposures to cold and dampness during the seasons of low temperature in the cooler or cold climates may tend to reduce the patients' resistance.

There are evidences that heredity contributes to the predisposition to this disease. This may be true, but the writer is more inclined to believe that in a large majority of cases what appears to be an hereditary tendency is probably the result of improper eating or living habits common to the entire family.

Alcohol is a contributing exciting cause at least. Whether or not it is a primary factor is questionable. During the course of the disease the ingestion of even a small amount of alcohol will aggravate the symptoms in many cases.

Food allergies probably play some part in contributing to arthritic symptoms. In asthma certain foods will cause exacerbation of symptoms but in arthritis they manifest their influence so slowly that they are more difficult to designate. . . . . .

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Trauma is no doubt a large contributing factor. Where there is restricted motion and impaired circulation caused by direct injury, atrophy of the bony structure may result. There is a traumatic influence resulting from the patients' habits which is an important etiological factor.

People with frail physiques, who try to do work beyond their capacity—work which is either physically or mentally tiring—are frequently subject to arthritis. The mechanically strained joints are just as important as in the hypertrophic type.

Undue mental exertion and nervous strain are always important etiological factors.

Persons, especially women, who are required to have their hands in water for long periods day after day frequently develop this type

Individuals who work for long periods in such a cramped position that the functions of the thoracic and abdominal viscera are impaired also are subject to rheumatoid arthritis.

Bad posture may act in a similar manner, causing mechanical strain, impairment of function of joints and muscles and nervous irritability. The causes of faulty posture are varied. Among them are: lack of proper muscular development properly to hold up the bony framework, and abnormalities, as described previously in the etiology of hypertrophic arthritis.

Any of these etiologic factors may result in osteopathic lesions or subluxations in the spine, which act in an insidious manner through interference with normal functions of the cerebrospinal and vegetative nervous systems, causing malfunction of any part of the body according to the location of the lesion.

The regions affected in atrophic arthritis are usually painful and swollen. While the swelling about the joint is rather soft, the skin shows some redness and has a shiny appearance.

There are many cases of rheumatoid arthritis, even of long standing, in which the symptomatology is typical but which show no roentgen evidence of joint change. In these cases the disease has been limited to the softer periarticular tissues and is not of sufficient density to show on the x-ray film.

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The patient suffering from this type of arthritis presents the appearance of a very sick individual. After the disease has reached a certain point, he has neither the inclination nor the ability to perform the exercises necessary to maintain proper health. Whatever duties are required of him in his daily life call forth a great effort, both mentally and physically. Very often there is a nervous irritability and the patient is rather hard to get along with.

The patient's thoracic spine usually is flexed and much of the inactivity may be ascribed to this condition. The results are low metabolic rate, secondary anemia, low blood pressure, impaired circulation, subnormal temperature, loss of appetite, weakness, and fatigue.

Owing to limited motion in the thoracic spine, there is, in turn, lack of flexibility of the thoracic wall. The function of the diaphragm is limited, and the sagged ribs cause a cramped condition of the thoracic viscera. This, in turn, means shallow breathing, and as a consequence the pulmonary function is impaired and the lymphatic circulation, which depends upon normal breathing, is below par. The cardiac function is naturally affected. Below the diaphragm the abdominal viscera suffer in like manner. The result of this is a general physiological inactivity, which deters the restoration of joint mechanics and normal health.

There is usually a typical blood picture in atrophic arthritis. It is one of hypochromic anemia. A study of the red cells in this type of the disease reveals them to be normal or microcytic in size. They, however, show varying degrees of anisocytosis and poikilocytosis. The color index is low and the blood plasma is usually pale. Through a modification of the Schilling hemogram the amount of toxicity in these cases can be determined. This varies according to the amount and duration of the infection.

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While the etiologic factors, which are active in a true atrophic arthritis, probably apply also in this type of the disease, some sort of endocrine imbalance appears to have considerable influence. However, we have found nothing in the literature to substantiate this view.

There is a class of cases in which are found evidences of both atrophic and hypertrophic arthritis

at the same time in one individual, and in the same joint. It may start as one type, for instance hypertrophic, and gradually symptoms of the atrophic type may appear, or vice versa. Etiologic factors applying to both can be traced. The pathological findings are often difficult to interpret, as the changes of one type may mask those of the other. As cases are studied more carefully, the percentage of occurrence of these "mixed type" cases probably will go higher than the figures show at present.

PART II—TREATMENT

Treatment of arthritis should proceed according to a carefully prepared program, based upon a complete knowledge of the etiological factors and the pathological conditions. Environment, habit, and food allergy are factors in the etiology. However, I have attempted to explain in the following paragraphs the management of the disease where infection is the salient factor.

There are three main objectives which offer a foundation upon which to carry out the most successful treatment. These are:

1. Location and removal of infection.
2. Treatment to normalize joint mechanics and prevent deformity.
3. Restoration of normal health and prevention of recurrence.

In treating hypertrophic arthritis, it must be remembered that the joint usually has undergone some pathologic change by the time the physician is consulted and the x-ray study begun. Should any infection be found, it should be removed, either by surgical or other treatment.

Rest of the joints affected is most important, as much of the inflammation causing the condition may have been the result of mechanical strain or overwork.

Many patients with hypertrophic arthritis are obese or at least somewhat overweight. Reduction of the excess weight must be attempted in a slow, moderate way. A diet much lower in calories than the patient is in the habit of taking may accomplish the purpose. A diet excluding the fats and the heavier carbohydrates, but using protein, 5 percent carbohydrates, and fruit has given good results. Another rather interesting diet which recently has received considerable favor, is one which excludes all dairy products (milk, cream, butter, cheese or anything containing them) with no restrictions on the carbohydrates. It is surprising what this diet will accomplish. However, as much of the overweight in most cases probably is due to a rich diet, it would seem that the diet of 5 percent carbohydrates and a moderate amount of protein would be preferable, as the possibilities of intestinal putrefaction are lessened and the weight reduction accomplished. At the same time the diet should contain an adequate amount of vitamins. A basal metabolism test should be made to ascertain whether or not the administration of thyroid extract would be of value.

There are several types of physical therapy which give some temporary relief. The infra-red lamp and various electrical currents which pass through the tissues are frequently used. The short wave diathermy seems to be the most popular at present.

Drugs have very little value in hypertrophic arthritis, with the exception of sedatives for the relief of pain. Sedatives, however, may do more harm than good because they relieve the pain and allow the patient to move about easily enough to create inflammation in the joint which is undergoing strain.

Mechanical strain must be relieved wherever possible. If subluxations are present, they should be corrected. Care must be observed in manipulating the affected joints, as a permanent limited motion may have resulted from the pathologic changes. Therefore, it may not be possible entirely to correct the subluxations on account of the excess bone formations and mechanical locking.

Chronic sacroiliac subluxations should be studied carefully to determine the cause. An x-ray taken with patient standing will show whether or not the legs are of equal length. Many very favorable results have been obtained by building a slight lift in the shoe of the shorter leg.

Weak or flat feet are subjects for correction. Properly built shoes may relieve strain considerably. Bad posture due to occupation may be difficult to correct, because the time and treatment involved might jeopardize the patient's livelihood.

Braces or other appliances can be made to fit the patient very comfortably and relieve mechanical strain. Plaster casts also have a definite place in the treatment of this disease. It may be necessary to keep the patient in bed until the inflammation from the joint strain has been relieved. The use of crutches is beneficial for the same purpose.

Osteopathic manipulative treatment is absolutely essential in preventing further mechanical strain; it aids in restoring good body mechanics and in building up normal health and resistance to prevent further advances of the disease. As the slightest pain and stiffness of a joint may indicate some malalignment and incipient arthritis, the osteopathic physician should be consulted. Considerable future trouble may be prevented by the correction of a simple subluxation.

In any type of arthritis the best treatment is prevention. If every boy and girl could be examined yearly by the skilled osteopathic physician, and treatment given to correct bad postural habits and body mechanics, the percentage of arthritis cases would be very much lower.

Atrophic or rheumatoid arthritis may be treated in general much like hypertrophic arthritis. It must be borne in mind always that while body mechanics plays an important role, infection is considered to be present in all cases. This infection must be removed and a quiescent stage reached before any constructive manipulation is administered; otherwise, the inflammation may be increased.

Since atrophic arthritis is considered to be a constitutional disease, with a chronic progressive infection and failure of many body functions other than joint manifestations, the program of treatment is based also upon the study of the etiological factors and the pathological conditions. No one form of treatment has been found to be universally successful in all cases of this disease. What may prove beneficial in one case may be of no value in another. Of course, removal of infection is the first procedure. In case there is a pronounced secondary anemia, preparatory treatment may be required in order to build up the blood, before any surgery is attempted.

Shock should be avoided as much as possible. The extraction of a number of infected teeth should be done at intervals of several days, removing one or two at a time to prevent too much reaction. In removing infected tonsils, it is my belief that the coagulation rather than the surgical procedure is advisable.

Removal of infection in the commonly accepted seats of focal infection, such as teeth, tonsils, sinuses, gall-bladder, urinary tract, fallopian tubes, and prostate is practiced universally. Treating the gastrointestinal tract, especially the large bowel, for infection has been reported by some writers. The majority, however, do not consider the intestinal tract important in this condition. On the contrary I believe it is important as shown later.

In the early stages of atrophic arthritis much can be accomplished by removing the infection from these common sites, while in the advanced cases considerable improvement is usually noted. However, there is generally a definite infectious blood picture remaining. I have found that this infection is usually in the gastrointestinal tract, as after treating that region successfully, the blood picture which has shown infection returns to normal. There are, however, a few cases in which the location of the infection is indefinite.

Many types of therapy have been used to treat this disease, following removal of infected foci. Almost all of them have shown fair results. There are a number of commercially prepared vaccines, all of which have been of some value. A well-prepared autogenous vaccine made from cultures of the stool, urine, or other excretions from organs which may harbor infection have given some fair results.

The use of foreign protein has been advocated, but it is becoming less popular. The use of gold salts has been revived, and, judging from the reports, has seemed moderately satisfactory in some cases. It is a dangerous therapy, and in my opinion the occasional good results obtained are not worth the chances taken in prescribing it.

Sulfanilamide is also dangerous. This drug and its related compounds now head the armamentarium of the M.D. profession. I believe that the mediocre results obtained in arthritis is not worth the chances taken in using it. Chaulmoogra oil is once more being well advertised, but the results of its use in arthritis have never been very startling. Treatment with bee venom is another revival. The fact that it is recommended to be used only locally on the affected region would indicate that it does little to relieve constitutional symptoms.

Mandelic acid has been a rather successful drug in treating many urinary infections associated with arthritis. It enjoys a fair amount of popularity.

Vitamin therapy is at present very popular. Vitamin B, in particular, has been of value in the relief of pain and in giving the patient a little more energy. Massive doses of vitamin D have been well advertised, but I have yet to see any startling results in the many cases I have observed.

Fever therapy has gained considerable favor, and appears to have some value. The fever has been produced in several different ways: the typhoid vaccine given intravenously, the malarial therapy, the use of heating cabinets, hot baths, and the short wave diathermy. The last mentioned is more extensively used than any other, and has given some good results. No one of the above mentioned therapies is used to the exclusion of the others and each one has given some satisfactory results. Many times one or another of them has been given in the hope that a miracle may result, with no regard for diet or treatment of the general constitutional symptoms and body mechanics.

Very often the patient suffering from this disease is underweight and presents the appearance of a well-advanced case of malnutrition. In such cases a diet is often prescribed to build up strength and gain weight. The mistake in this procedure is in prescribing the building up diet before all gastrointestinal infection has been removed.

My own experience with the ketogenic regime has given a very good percentage of favorable results. Beckman[5] maintains that this ketogenic regime seems to be the most rational dietary procedure in asthma, where the gastrointestinal tract is causing the trouble. It would seem a plausible belief that the same procedure could be used in arthritis, where there is found to be an intestinal infection causing the condition.

It may be well to give briefly a history of ketogenic diet, explain its administration, and report the results obtained. Thus far, this diet has proved to be the most satisfactory therapeutic agent in clearing up infection in the intestinal tract.

The history of ketogenic diet and the results of ketosis apparently have been known for a comparatively long time. According to Bridges,[6] in his "Diet for the Clinician:" "It was observed by Wilder that children who were subject to epileptic seizures ceased the attacks when undergoing starvation . . . produced an acidosis with an associated ketonuria, lowered blood CO_2 combining power and an alteration in the pH concentration. It was thought that the production of this acidosis acted with a sedative effect and thereby prevented the convulsive seizures.

"Talbot expresses the opinion that the acidosis produces its effect probably by renal stimulation and thus increases the fluid output, establishing thereby a condition of relative dehydration.

"Bearing in mind the apparent efficacy of dehydration as exhibited by cases of acidosis, the ketogenic diet was formulated. As far back as 1769, Stark showed that diets high in fat and low in carbohydrate have a dehydrating effect. This observation has been repeatedly confirmed by other investigators. The continuation of a ketogenic diet alters the general metabolism, with the resultant diminution of tissue fluids. The time-worn slogan that 'fat burns in a carbohydrate flame' is still invariably true. The ketogenic diet is one in which a disproportionate high amount of fat in relation to a minimum amount of carbohydrate is ingested. The result of this diet—due to faulty combustion of excess fat—is that ketosis ensues."

Judging from the above quotation, there is not much doubt that for many years there has been some knowledge of the therapeutic value of ketosis. What actually took place within the human body, and resultant change of chemistry was not definitely known until recent years.

Many of the large M.D. clinics treated numerous urinary infections by the use of a ketogenic diet. It was discovered, however, that the infections which would respond favorably to the diet were organisms primarily found in the intestinal tract, and were secondary in the urinary tract. This gave rise to the

theory advanced by Thomson[7] early in 1933 that the importance of the intestinal tract was being overlooked in the etiology of this disease.

He pointed out that in many cases where urinary infection was treated by ketogenic diet, infection actually was being eliminated from the intestinal tract. He supported his theory by naming a number of pathogenic organisms found in the urinary tract in arthritis which were secondary infections, the primary seat being the intestinal tract. He believed that a ketogenic diet could be devised to eliminate intestinal infections, and since then my observations of about seven hundred cases treated in this way indicate this to be true.

Following the promulgation of Thomson's theory six years ago, believing that the intestinal tract played a very important role in the etiology of arthritis, I started administering the diet to every case showing arthritis symptoms, provided I was satisfied that all focal seats of infection, with the exception of the intestinal and urinary tracts, had been eliminated.

It soon became evident that the cases which presented an infectious blood picture responded more favorably than those which did not; also the cases of atrophic arthritis improved much more rapidly than did those of the true hypertrophic type.

I found that the more rigid the diet the better the results. By preparing the patient with a five or six day detoxicating diet which was mildly alkaline in reaction, a ketosis, together with a lower pH, could be obtained far quicker than without the preparatory diet.

The present diet is usually given in the following stages: (1) preparation, (2) ketogenisis, (3) restoration.

The preparation consists of placing the patient on a diet of whole milk, oranges and grapefruit, with care that proper elimination is maintained. These liquids are taken for three days. During the succeeding three days, the five per cent carbohydrate vegetables are taken in addition to the liquids. I have observed that by using this preparatory diet, the patient has less constipation and nausea, and also feels generally better during the period of ketosis. This seems to be due to the fact that the patient is pretty well detoxicated before the acid-forming diet is given.

On the seventh day the ketogenic diet is started. The diet which proved most successful is higher in fats and much lower in proteins and carbohydrates than the diets used to treat urinary infections alone. This diet consists approximately of about fifteen parts fats, three parts proteins, and two parts carbohydrates. A stated amount of food daily is not required if the patient does not desire it, but when a smaller amount is taken, the proportion of fats to the proteins and the carbohydrates must not be decreased at any meal.

The fats used in the diet are heavy cream, butter —preferably unsalted—bacon and salad oil. The cream may be used in various ways, as in custards, ice cream, cream soups, on vegetables, in eggnogs, coffee, etc. Whipped cream is sometimes easier for some patients to take with bouillons and broths. Butter may be used in the preparation of meats, vegetables, broths, and soups. A skillful dietician can prepare the fats with the proteins and carbohydrates in such proportions as to be palatable. The proteins used are meats of any kind, fish, fowl, eggs, and cheese. The carbohydrates used are lettuce, spinach, asparagus, tomatoes, sauerkraut, celery, cauliflower, string beans, carrots, broccoli, cabbage, green peppers, Brussels sprouts, and mushrooms.

The food allowance for one day is:

Meat—¼ lb.
Eggs—1
5% vegetables—½ pint
Heavy cream—½ to 1 pint
Butter—¼ to ⅓ lb.
Bacon—4 strips
Salad Oil—⅓ cup

The amount of fats may vary somewhat according to the patient's reaction.

The diet may be considered to be successful in producing ketosis if the urine shows a positive acetoacetic or beta-hydroxybutyric acid reaction, together with a pH of 5 or lower. These reactions should appear within forty-eight hours and be maintained for at least five days if the patient is able to tolerate this condition.

The physical reaction varies with the individual. The average person lacks energy, feels pretty well subdued, and is incapable of any keen mental activity. He tires very easily and is often nauseated. Constipation is frequently present. Sauerkraut juice or mineral oil offers relief for this condition. Enemas should be avoided in order not to alter the low pH of the colon.

Following the ketosis, an alkalinizing diet of milk, oranges and grapefruit is taken for three days; then the 5 per cent carbohydrate vegetables are added as in the preparatory diet. This must be kept up for at least ten days before proteins and other carbohydrates are added. Where there have been vitamin deficiencies and dietary indiscretions, proper corrections must be made. The patient must never be allowed to go back to his bad dietary habits—habits which probably contributed to his poor condition, which in turn required such a drastic diet.

A diet consisting of most of the 5 per cent carbohydrates, raw fruits, dairy products (milk, butter, cream, cheese), and proteins such as eggs, beef-liver, kidneys and seafoods will supply all the vitamins B, C and D required for the patient suffering from atrophic arthritis.

As stated before, ketosis is present if the urine shows a positive beta-hydroxybutyric and acetoacetic acid test, together with a pH of 5 or lower. Quoting from Hawk & Bergeim's[8] "Practical Physiological Chemistry": "Normally only a very small amount of acetoacetic acid, beta-hydroxybyturic acid, and acetone are found in the blood and urine. When the body fails to completely oxidize the fatty acids of the diets, the amount of these acetone bodies in the blood rises, and very considerable quantities may be excreted in the urine. Such a condition is called ketosis. It develops in normal man on a diet high in fat and low in carbohydrates. It is found in man during fast, after the glycogen reserves have been exhausted and the body begins to subsist largely on fats derived from its own tissues."

If these ketone bodies act as a urinary antiseptic it is reasonable to suppose that they act in a similar capacity in the intestinal tract where they originate.

I believe that a considerable amount of success obtained in administering the ketogenic diet is due to the fact that osteopathic manipulative treatment is ad-

ministered daily. Arthritic joints are not manipulated until any infection is in a quiescent stage.

As stated previously, atrophic arthritis is a progressive constitutional disease and every case is a separate study in its particular manifestations. The symptoms are diversified—no two cases ever running the same course. Treatment which would produce satisfactory tissue response in one case is of no value in another; hence one must proceed with caution. General osteopathic manipulative treatment should be given while one is on the diet, but manipulation of affected joints is not advised until the disease appears to have reached the quiescent stage. Otherwise the inflammation may be increased.

Unlike hypertrophic arthritis, it will be found that not only the joints, about which the patient complains, are affected but also a large portion of the entire body mechanics is involved with failure of many body functions.

This being true, it is obvious that the posture will become faulty early in the disease, and the patient should be treated frequently in order to correct this. The amount of treatment and correction depends upon the individual case. It is rather difficult at first to determine just how much the joint can stand and still respond favorably. Where the inflammation has been severe, caution is advised and just enough treatment should be given to bring about favorable tissue response. A moderate amount of experimenting may be required at first in order to bring about the most satisfactory results. Progress could be greatly impeded by misdirected manipulation.

Since it becomes a subject of correction in so many cases, the effects of the faulty posture must be carefully studied. The patient is usually in body flexion and much of the physiologic inactivity may be ascribed to this condition. Owing to the lack of flexibility of the thoracic wall, there is a limited function of the diaphragm, and the sagged ribs cause a cramped condition of the thoracic viscera. This, in turn, means shallow breathing, in consequence of which the pulmonary function is impaired and the lymphatic circulation, which depends much upon normal breathing, is below par. The cardiac function is naturally affected. Below the diaphragm, the abdominal viscera suffer in like manner. General physiologic inactivity is the result which deters the restoration of joint mechanics and normal health.

After the disease has reached the point where the patient feels the effects of the failure of the body functions, he has neither the inclination nor the ability to perform the exercises necessary to benefit his condition. Consequently, recovery depends upon gradual restoration of normal physiologic function in all parts of the body.

Osteopathic manipulative therapy should supply the greater part of the restoration of the physiologic activity. The flexibility of the thoracic wall must be increased. This is accomplished by extension, gradually increased to hyperextension of the thoracic spine, raising the ribs and relaxing all muscles involved in the mechanism of breathing. This means increasing the excursions of the diaphragm, thereby permitting the thoracic and abdominal viscera to return to their normal position. The circulation to the viscera, which has been greatly impaired, may then flow unimpeded. The lymphatic circulation is forced into activity by the increased motion of the entire thorax. The faulty posture and the muscular inactivity may be gradually restored to normal. All of this work, of course, depends upon the severity of the disease and how much permanent joint changes has taken place before the course of the disease was stopped.

Fatigue and mental cares must be avoided at all times. Progress is usually slow. A conservative attitude as to exercise and manipulation must be maintained in the early part of the treatment. Recovery always will be more rapid if exercise is not carried to the point where it results in painful joints. The patient must be made to understand that he is in a sort of training as would be expected of an athlete preparing for a great physical test, but never to use the limit of his strength while in training.

It may be necessary to start treatment while the patient is in bed. Moderate progress can be made by placing the patient in corrective position, in cases where manipulation would cause too much discomfort. One way of raising the diaphragm is to have the patient on his back with pillows placed under the lower thoracic region for given periods. This brings about hyperextension and relieves the cramped viscera. Raising the ribs is of considerable value and is best obtained with the patient lying on the side. The operator, by placing the palms of his hands on the angle of the ribs, makes a steady upward tension for one or two minutes. Muscle stretching can be brought about by simple application of mechanics. When manipulating a sensitive joint, I have found straight tension applied intermittently at right angles to the articular surfaces a very good technic and less painful to the patient than any other. Osteopathic manipulation should be applied to the spine and the lymphatic pump should always be part of the treatment.

I can not overemphasize the importance of exercise and rest. The physician should study the case at hand and devise exercises which apply to the particular joints affected or to correct a resultant deformity. Deep breathing, of course, increases the lung capacity and helps to increase the flexibility of the thoracic wall. When the disease has reached the quiescent stage, the patient should be encouraged to keep up exercises, in order to increase the mobility of every arthritic joint. As the patient never should feel fatigue, he must keep within the limits of his own endurance and take periods of complete rest very frequently. If he can be encouraged to take up some form of sport, it is surprising what progress can be made in many cases.

In some cases splints are used to prevent deformity. They sometimes protect the joint when the disease is in the active stage. By immobilization, ankylosis often can be prevented by decreasing inflammation caused by motion and shock. Sometimes splints are used to correct deformities after inflammation has subsided. Frequent changes in order to increase extension or flexion are found beneficial.

In cases where complete ankylosis has taken place, considerable force may be required to produce motion. This is done frequently with the patient under an anesthetic. As there is often atrophy of the bones near an ankylosed joint, great care should be taken to avoid fracture when breaking up the ankylosis. Open operation has recently become quite successful,

but the surgeon must make sure the disease is in the quiescent stage.

My observations in the past few years have proved to me that osteopathic manipulation, besides the removal of infection, is absolutely essential in the treatment of atrophic arthritis to normalize physiologic activity and restore body mechanics.

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Arthritis from an X-Ray Point of View, With Emphasis on the Visualization of Spinal Subluxations*

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Any attempt to survey a field as vast from the standpoint of pathology, and as old in history, as that of arthritis, represents a triumph of hope over experience. For as long as arthritis has been recognized for what it is, there have been attempts to classify it, but despite thousands of books written on this subject, all classifications leave something to be desired in the way of completeness.

It is not in the province of this paper to deal with the history of arthritis from the early ages, since this subject has been handled even by the anthropologists, and would take us far afield. However, it is pertinent to say that the modern attempt at classification dates from the middle of the nineteenth century, when Virchow[1] classified chronic arthritis as arthritis deformans, and included both the proliferative and the degenerative types. Indeed, the 1930 edition of Osler[2] still used this classification. In 1909 Nichols and Richardson[3] attempted to classify all types of arthritis histologically according to the parts of the joint primarily affected. Both the British Society for the Study of Rheumatism and the American Committee for the Control of Rheumatism have followed this classification, and, with variations, this is the basis which all modern writers have used. Allison and Ghormley[4] in 1931, working with the Delamar Research Fund, wrote a classical treatise based on 239 cases which came to operation. This added considerably to the study of the pathology of joints, and also to the x-ray findings as related to the pathological conditions.

In a large measure, we shall follow the classification of Allison and Ghormley.[4] One point on which we diverge is that we speak of the chronic arthrites first, because a complete understanding of each type automatically will make a comprehension of other types of arthritis simpler, since they fall into one or the other classification, whichever predominates. Indeed, one author, Ely,[5] has classified the arthrites as Type 1 or Type 2. The only weakness of this classification is, as Osgood[6] has pointed out, that sometimes one joint may be undergoing both types of change at the same time. Even so, an understanding of each "pure" type permits us also to understand the variations from type.

In this paper I shall discuss the x-ray aspect of the various arthrites, but to do this, I must emphasize that in arthritis particularly, and in other diseases generally, the x-ray is only one part of the diagnosis, and for one to attempt to diagnose by x-ray alone would be as careless as to try to diagnose without x-ray at all. It would be as foolish as for a roentgenologist who is not a clinician to render a diagnosis.

The value of the x-ray to the clinician is that it helps him get a better idea of the pathologic process by visualization of the joint architecture. Sometimes, clinically, a process will seem far advanced, whereas the x-ray will show that actually not much tissue disturbance has taken place. Furthermore, there are certain characteristics which show on the radiograph, and suggest that an arthritis may be of a certain class, and that certain other diagnostic procedures should be undertaken. For instance, the findings of an unusually thick periosteum in a swollen joint would suggest that syphilis is present, but it would be necessary to confirm this by clinical means. Similarly, an extensively swollen joint with considerable involvement of the soft parts would suggest an early pyogenic condition, but it would be necessary to investigate further to confirm this. The x-ray also gives us a permanent record of the individual's condition, and by repeated examination will show whether the condition is advancing, has been arrested, or is clearing up.

At this point it must also be emphasized that one x-ray study alone often is not enough, and that it may be necessary to make serial studies, at stated intervals, before we can arrive at a definite conclusion. As a matter of fact, one of the weaknesses in the study of arthritis, and the difficulty of classification, lies in the fact that no two cases are alike, be-

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cause these conditions are progressive, so that one case is seen in an early stage, another in the intermediate stage, and others in the final stage. It is to be remembered also that in all types of cases arthritis may disappear in the early stages, or again may progress to a certain point and remain static.

It is now an axiom that the x-ray finding must be a translation of whatever pathologic process is transpiring in the regions studied, and for that reason, before attempting to describe the x-ray findings in any type of arthritis, we first must study the normal joint, and, once we understand this, the next logical step is a study of pathologic changes as they vary from the normal.

Our classification of joint diseases is based in part upon the principal pathological changes of the joint, and in part upon the causative agent. In this we follow, in a large measure, the classification of Allison and Ghormley.[4]

I. Origin Unknown
  (*a*) proliferative arthritis
  (*b*) degenerative arthritis

II. Origin Known
  (*a*) traumatic arthritis
    1. synovitis
    2. sprains, etc.
  (*b*) bacterial agent
    1. tubercle bacillus
    2. gonococcus
    3. staphylococcus
    4. streptococcus
    5. pneumococcus
    6. typhoid bacillus
    7. bacillus dysenteriae
    8. treponema pallidum
    9. influenza bacillus
    10. bacteria causing rheumatic heart disease
  (*c*) arthropathies
    1. tabes dorsalis
    2. syringomyelia
    3. leprosy
  (*d*) constitutional disturbances
    1. gout
    2. hysteria
    3. hemophilia
    4. intermittent hydrarthrosis
    5. anaphylactic reactions.

With this classification in mind, the questions we must ask ourselves are: (Allison and Ghormley[4]):

(1) What is the etiological factor?

(2) What tissue of the joint is primarily affected?

(3) What is the nature of the change in the joint tissue?

The one common denominator of all arthrites is the joint (Fig. 1). Joints vary in different parts of the body, but for our purpose are essentially alike. The most common joint is composed of the ends of two bones, an articular cartilage composed of hyaline tissue over the end of each, and a joint capsule which is lined by synovial membrane, and, according to Spackman[7] and other histologists, an extension of the synovial membrane over the articular cartilage which is known either as the perichondrium, or the synovial extension. We prefer to call it the perichondrium. Also it must be pointed out here that the bone marrow is intimately connected with the joint, particularly the cancellous tissue, and Key[8] has shown that when a contrast material is introduced into the joint, it almost immediately reaches the marrow spaces.

Nichols and Richardson[3] originally pointed out that just beneath the articular plate of bone there is a region called a zone of provisional calcification. This is highly vascular, and is composed of cartilaginous cells and new bone cells. It is from these cells that the constant regeneration of articular bone occurs, and, as Spackman[7] points out, this is the first line of contrast from the joint surface which is noted in the x-ray. For that reason it is important.

The three important parts of the joint, from the standpoint of arthritis, are the synovial membrane, the articular cartilage, and the marrow spaces. In all forms of arthritis which resemble the proliferative type, the synovial membrane and the bone marrow proliferate at the same time, and by doing this cause a destruction of the articular cartilage. In the degenerative type, the articular cartilage is the tissue which is primarily affected, and the bone marrow and synovial membrane are only secondarily involved. All other tissues of the joint, such as cortical bone, joint capsule, and the muscles around the joint, are involved secondarily to these two processes.

We will not, in the study of these cases, go into detail on the clinical side, since many books on diagnosis take up this point, but it must be emphasized again and again that this phase is most important in arriving at an interpretation of radiographs of any joint.

PROLIFERATIVE ARTHRITIS
(Atrophic, Rheumatoid)

Proliferative arthritis affects particularly, at first, the synovial membrane and the bone marrow. There is a proliferation of the synovial membrane and the connective tissue elements in the endosteum of the epiphyseal marrow. For this reason it is called proliferative arthritis. As the synovia proliferates, it produces a layer of granulation tissue, which extends over the margin of articular cartilage, as a pannus, and gradually causes its destruction. At the same time there are attempts at repair, and at the regeneration of cartilage by the perichondrium. Simultaneously there is proliferation of the connective tissue of the marrow below the articular cartilage, which, in its growth, forms pannus underneath the cartilage, penetrating the zone of provisional calcification and destroying the hyaline cartilage from below (Fig. 2).

As a result, the articular cartilage is destroyed from both the synovial membrane above, and the growth from the endosteum of the bone marrow below. When the cartilage has been destroyed, and this usually occurs irregularly, the granulation tissue from above and below meet. The joint is thus destroyed, fibrous union occurs, and if the process continues, calcification with ankylosis results, either partial or complete, as the eventual outcome (Fig. 3).

Second to the destruction of the cartilage, changes eventually occur in the bone. This is due to decalcification and is visualized as an erosion. Usually this occurs first on the margins of the bones. Next there is, due to proliferation of endosteum of the bone marrow, a destruction of the articular plate of the bone irregularly, and because of this irregularity, subluxations and deformities of the joint ensue. Eventually, the marrow cells of both sides appose each

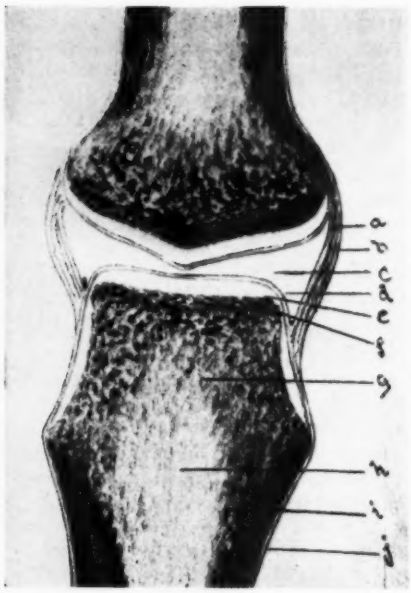

Fig. 1.—Normal joint. Diagram of a simple joint in which two bone ends covered by their cartilage articulate, as in the phalangeal joints. (a) synovial membrane, (b) joint capsule, (c) joint space, (d) perichondrium, (e) joint cartilage, (f) zone of provisional calcification, (g) spongy bone, (h) medulla, (i) cortex, (j) periosteum.

Figs 1, 2, 3, 5 and 6 reproduced from Dr. Edgar W. Spackman's article, "The Roentgen Aspect of Chronic Arthritis," in the *American Journal of Roentgenology and Radium Therapy*, 1936 (Feb.) 35:156-187.

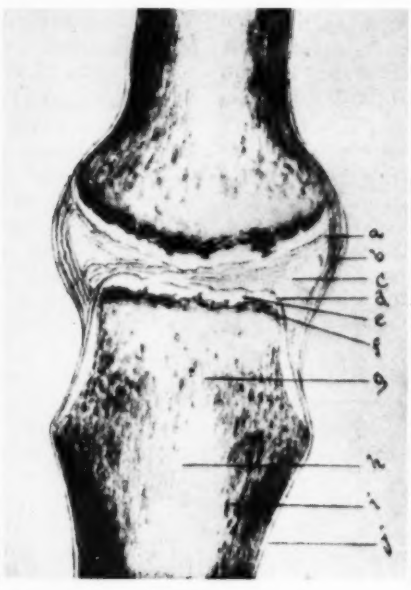

Fig. 2.—Atrophic arthritis—early stage. Diagrammatic illustration of pathological changes in early atrophic arthritis. (a) proliferation of synovial membrane to form a pannus, (b) thickening of joint capsule, (c) joint space partially filled by ingrowth of pannus, (d) irregular destruction and proliferation of perichondrium, (e) erosion of cartilage by the synovial pannus, (f) irregularity of line of provisional calcification due to ingrowth of capillary loops, (g) atrophy of spongy bone, (h, i, j) unchanged.

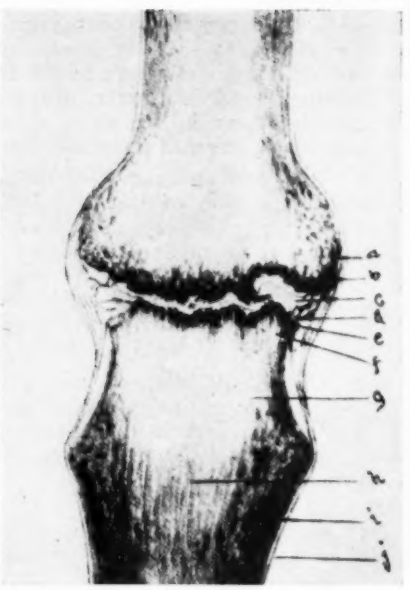

Fig. 3.—Atrophic arthritis—intermediate stage. Diagrammatic (a) synovial membrane disappeared as it has proliferated into the pannus, (b) joint capsule thickened, (c) joint space almost completely obliterated and crossed by bands of fibrous adhesions, (d, e) gross irregularity of cartilage which has fused with opposite cartilage but fragments are still perserved, (f) gross irregularity of zone of provisional calcification, (g) increased atrophy of spongy bone, (h, i, j) unchanged.

other, coalesce, and finally new bone is formed, and nothing but the original indentation of the joint can be seen.

In the early stages there is no proliferation of the capsule, but as the disease progresses this gets more and more sclerosed until the final stages when it becomes involved in the general calcifying process and disappears. The muscles atrophy at about the intermediate stages, and this, plus the swelling of the joints, gives the peculiar fusiform appearance which is said to be characteristic of atrophic, or proliferative, arthritis. The marrow cells beyond the zone of provisional calcification are found to be fibrosed, the marrow almost having atrophied, so that there is a picture of generalized atrophy in the shaft of the bone. As a matter of fact, one of the characteristics of this disease is an inherent tendency to systemic decalcification.

With this pathologic picture in mind it will be understood that inasmuch as there is no cartilage destruction in the early stage, and as the effusion may be extensive, the x-ray picture will be simply one of an enlarged joint. Later on, as the cartilage progressively is destroyed and the effusion lessens, the joint will become narrowed. According to Spackman[7], the first change would result in an irregularity of the zone of provisional calcification, and a haziness of the bone adjacent to the joint.

The intermediate stage is the one in which a progressive amount of destruction is noted. Here, pathologically, the cartilage of the joint is destroyed gradually, so that there ensues an irregularity of the joint surface, with a subsequent deformity, and a marked thinning of the joint, a thickening of the joint capsule, and atrophy of the periarticular tissues. It is in this stage that the characteristic fusiform swelling of the fingers is noted, and also at this point that the first erosions in the bone are noted. With this pathological picture in mind, the following findings will be observed on the roentgen film (Spackman's classification[7]): (1) atrophy involving the entire bone ends, advancing into the shaft, presenting a ground-glass appearance, associated with secondary disuse-atrophy of the shaft itself; later on, (2) gross irregularity of the zone of provisional calcification, with narrowing and destruction of small areas; (3) contact of two adjacent bodies at various points, with continuation of lighter areas, which indicate unabsorbed cartilage islands; (4) complete fusion of zones forming a single line of increased density; (5) the remains of joint structure are now obliterated; (6) thickening of the periarticular tissue in the immediate vicinity of the joint, and (7) small calcified deposits about the joint margins, which can be differentiated from bony spurs (Fig. 4).

The final stage, pathologically, is an exaggeration of the intermediate stage. Hence, the x-ray films show: (1) generalized atrophy throughout all bone structure; (2) complete or partial disappearance of the zone of provisional calcification, and sometimes enlargement of the punched-out areas in the immediate vicinity; (3) deformity of the bone ends, due to softening and telescoping; (4) continuity of the trabeculated bone, which crosses from one bone end to the other; (5) in many cases, continuity of the cortex and marrow structure, forming a continuous shaft;

Fig. 4.—Early proliferative (rheumatoid or atrophic) arthritis. X-ray shows swelling of fingers, early erosions at the margins of the joints, some slight atrophy, and even beginning subluxation of the first phalanx of the index finger of the right hand.

(6) complete disappearance of reaction around the joint.

Proliferative arthritis of the spine is a rather serious condition and usually occurs in young people. The underlying pathological process is similar to that described in the joints in general. There are two types, but they are closely allied, and frequently combined. One type affects the apophyseal joints particularly and gives us a picture similar to that already described. The other type, which affects particularly the discs, resulting in their absorption, is characterized by a secondary calcification of the anterior and lateral spinal ligaments. Both types cause deformity and the end-result is complete ankylosis. Like other types of arthritis, the condition is found in varying stages, and may remain static at any one of these, though usually it is an all-too-progressive disease.

DEGENERATIVE ARTHRITIS
(Hypertrophic arthritis, Osteoarthritis)

Degenerative arthritis is called also hypertrophic arthritis, osteoarthritis, osteoarthrosis, and so forth. The choice of the term "degenerative" is due to the fact that the principal pathological effect on the hyaline cartilage is a degenerative one. The other predominating effect is one of hypertrophy of the articulating margins of the bone. Because of this latter reaction, the term "degenerative" is somewhat of a misnomer.

The degeneration of the hyaline cartilage is a slow process. It is a very specialized tissue, and for this reason does not regenerate. For some unexplained reason there is a gradual destruction which is termed "fibrillation" of the matrix of the hyaline cartilage, irregularly throughout. The process begins first in the center of the cartilage, where there would be weight-bearing if it were such a joint, and where the circulation is poor. Gradually there is a proliferation of fibrous cartilage from the perichondrium, which imperfectly attempts to compensate for the destruction. While this occurs, the cellular element of the cartilage is hyperactive, particularly at the periphery, near the capsule of the joint, and fibrous tissue is formed, which becomes fibrocartilage, and eventually becomes calcified, and forms new bone which eventuates in the so-called osteophytic spurs, or lippings, or bridgings. In the meanwhile the cartilage fibrillates more and more, and typical crevices are formed, which are filled in with fibrocartilage, so that there is more irregularity of the interarticular cartilage, and this permits distortion of the joint. As the cartilage of one side is destroyed, the fibrocartilage may push into these cavities and eventually calcify, thus helping in the distortion of the joint. As the cartilage is destroyed, the bone opposite the destroyed area becomes denser, and this causes an eburnation which is typical of this type of arthritis. This eburnation, plus the growth of new bone on the margin of the articulating bony surface, plus the subluxation due to deformity, gives a characteristic radiographic and clinical picture. In the fingers, particularly at the terminal phalangeal articulations, the phenomena described form Heberden's nodes, which are characteristic of degenerative arthritis.

There is a distinct involvement of the bone marrow, and the endosteum is stimulated to grow. The zone of provisional calcification is active at first, but it does not pierce the bony plate, nor is it pierced by endosteal growth. As the cells of the endosteum of the spongy bones proliferate, they deposit new bone about the trabeculations, filling in the marrow spaces, and forming a dense layer which is irregular, and replaces the zone of provisional calcification.

The synovial membrane, which is so active in the proliferative type of arthritis, may become indurated, and the synovial villi may form new fibrocartilage, which becomes calcified, and particles may break off and become "joint mice." These are sometimes spoken of as "foreign bodies," but it is obvious that since they were originally formed in the joint, they are not foreign to it.

In the middle and later stages the shaft of the bone shows some cystic formation, and some atrophy of disuse. At first the periarticular tissues are not involved; later on the capsule becomes thickened and fibrosed, and eventually the muscles atrophy.

I consider this form of arthritis particularly important to the osteopathic profession, since I think a study of this and the traumatic type go far in proving the existence of the so-called osteopathic spinal lesion, for osteoarthritis of the spine often affects the various parts of the joints, such as the articular facets, the joint spaces, the foramina, and the discs, and is conducive to subluxations, such as were discussed previously. These subluxations cause a diminution of the size of the foramina, and with this, there may be in turn, a fibrosis about the nerve root bundles as they pass through the foramina, resulting in a radiculitis. When Dr. Still suggested, years ago, that spinal joint lesions affected the outgoing nerves, he was scoffed at, but modern x-ray studies, and dissections and pathologic studies, have proved this to be the case. Studies by Hadley[9] and Oppenheimer and Turner[10] have proved this quite definitely.

The x-ray findings of hypertrophic arthritis must necessarily be divided into early, middle, and late stages. In the early stage, (Fig. 5), there may be a slight swelling around the joint, particularly if it has been traumatized. The joint space then

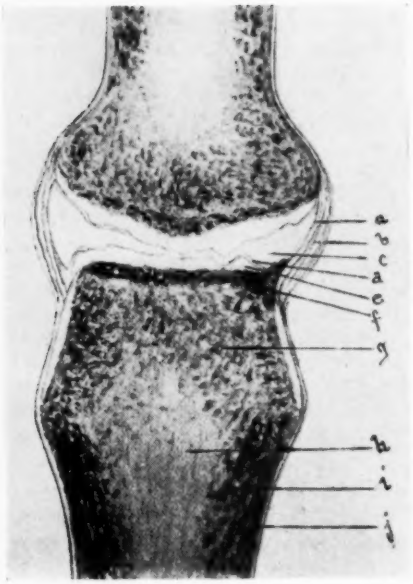

Fig. 5
Hypertrophic arthritis—early stage. Diagrammatic illustration of pathological changes in early hypertrophic arthritis. (a, b, c) little or no thickening of the synovial membrane and joint capsule, joint space of normal width, (d) perichondrium destroyed in places and proliferating elsewhere to form new cartilage, (e) cartilage eroded and dissolved, resulting in gross irregularity of surfaces, (f) spur formation rising from the zone of provisional calcification and extending into the junction of cartilage, bone and capsule, (g, h, i, j) unchanged.

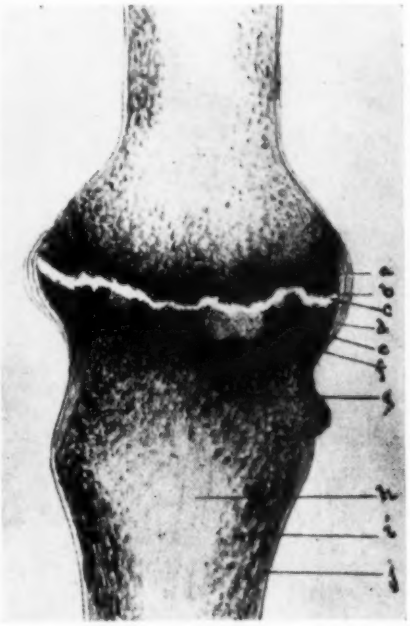

Fig. 6
Hypertrophic arthritis—intermediate stage. Diagrammatic. (a, b, c, d, e) cartilage has disappeared but joint space still preserved, bony ends now articulating, (f) zone of provisional calcification thickened and punched out areas of decreased density containing mucoid material, (g, h, i, j) unchanged although slight atrophy may be present.

becomes somewhat narrowed; there may be a slight thickening of the zone of provisional calcification, and a slight broadening of the circumference of the articulating surface (Fig. 7).

The intermediate stage shows much greater diminuation in the size of the joint space, (Fig. 6), and partial subluxations; irregular thickening of the zone of provisional calcification; punched-out areas in the shaft of the bone, associated with well-formed spurs on the margins of the bones. The broadening of the margin of the bone continues, and Heberden's nodes, which are characteristic of the disease when it affects the fingers, are observed; finally, secondary atrophy of the entire shaft is noted.

The final stage shows an enlargement of the spurs; much more irregularity of the top of the joint surface; marked subluxations; eburnation of the bone proximal to the joint space; and punched-out areas of gross deformity, with one bone fitting into the irregularity of the other; broadening of the circumference of the joint, to a marked degree; and, finally, advanced secondary atrophy of the shaft.

Traumatic Arthritis.—Having finished a consideration of the two principal types of arthritis, let us turn to the traumatic type, since this is probably the type most frequently encountered in osteopathic practice. Incidentally, this and the neurotrophic type of arthritis follow the pattern, more or less, of the degenerative form.

In traumatic arthritis the causative agent may be either an acute process, such as a sprain of a joint, or a fracture, or a dislocation of either a joint or a cartilage, or it may be the result of a long-continued chronic process, which is traumatic in its final result. The pathological findings in traumatic conditions vary, of course, with the extent and type of trauma. Acute conditions may result in a tear of a single cartilage; there may be extensive or moderate exudation, due to the effect on the synovial membrane, and this may, in the course of time, proceed to complete healing, or to the replacement of the cartilage with fibrous tissue, and that may be the end of the process.

In the early part of this paper we mentioned the three types of tissue that are involved, and observed that in the degenerative type the hyaline cartilage is the principal factor. Similarly, in traumatic arthritis, the hyaline cartilage is most extensively involved. Changes similar to those described in degenerative arthritis are seen, that is, fibrillation of the cartilage, irregular absorption and replacement by fibrous or bony tissue, or both. The calcification of this tissue causes a thickening of the subchondral plate. The synovial membrane is often thickened and hemorrhagic, and the villi are often involved, but there is no characteristic pannus formation. Sometimes these villi undergo degenerative osteoid changes and become calcified, leading to the formation of joint mice. The bone marrow is not involved extensively, but there is a proliferative response to irritation, and this often causes a so-called hypertrophic arthritis, with subsequent formation of spurs.

From the foregoing it can be seen that the x-ray studies will vary enormously. First, if the trauma is a simple one, the x-ray will show nothing. If the trauma is a violent one, the x-ray will show an effusion and periarticular swelling. If one of the bones of the joint has slipped, the swelling may be unilateral, with the rest of the joint normal. Various slight fractures or periosteal tears may be noted. If the condition becomes chronic, the joint space will be narrowed; there may be joint mice visualized. There may be osteophytic changes, with bony spurs, and eventually there is presented an x-ray picture typical of chronic degenerative arthritis.

Traumatic arthritis of the vertebral column: Whether as a result of direct trauma, or as a re-

Fig. 7.—X-ray showing practically all the stages of degenerative (hypertrophic) arthritis; narrowing joint space, broadening of the articular surface, irregular "fibrillation," and destruction of cartilage, subluxation, productivity of the bone generally, and cyst-like formation in the subchondral spongy bone. The typical Heberden's nodes are visualized in the peripheral phalangeal joints of both hands.

sult of disease in the discs or the vertebrae, definite changes occur, which result in subluxations of the apophyseal vertebral articulations. These can be visualized on the x-ray beyond peradventure of a doubt.

Dr. Still told about such subluxations over half a century ago. He was sneered at, and abused by the entire allopathic profession (and is to this day by Fishbein and his followers), yet the x-ray definitely settles this moot question and, curiously enough, the proof has come in part from roentgenologists and anatomists in the allopathic profession.

Schmörl began fifteen years ago to show that disc disturbances occur, and herniations of the nucleus pulposus take place, either into the vertebral body, or through the annulus fibrosus into the vertebral canal. This can occur as a result either of trauma, or of a degenerative process. Oppenheimer and Turner[10] showed roentgenographically that arthritic spurs cause a definite narrowing of the foramen, and, by pressure, produce radiculitis. Hadley[9] has gone further, and by microscopic pathological studies of the nerve roots, combined with photographs of skeletal tissue and x-rays of the same specimen, has proved definitely that subluxations and narrowing of the vertebral foramen can be visualized, and that these pathological alterations result in pressure on soft tissue in the foramen, including nerve tissue. On the basis of these findings, he explains many back symptoms, shoulder, arm, and intercostal pains, radiculitis, neuralgia, sciatica, and so forth.

Hadley[9] has various standards by which he may ascertain the presence of subluxations. These are termed "anatomicoradiographic studies" of the spine. He points out that thinned discs which do not cause subluxation of apophyseal joints do cause a kyphosis. This is noted especially in the thoracic region, and possibly in the upper lumbar region. In the lower lumbar region, and in the cervical

Fig. 8.—X-ray showing the S-curve between the second and third lumbar vertebrae. Arrows point to the spaces between the fourth and fifth lumbar vertebrae, where the S-curve is completely obliterated. This indicates subluxation of these vertebrae.

region, subluxations are the usual terminal findings. Subluxations may result in the following causes of referred pain:

"(1) Strain upon the ligamentous structures of the articulations.

"(2) A disturbance in the relationship between the articular surfaces . . . Thinning of the disc may thrust the lower vertebral body forward beneath the one above, so that the intervertebral foramen is decreased not only in its axial but also in its anteroposterior diameter.

"(3) With encroachment of the intervertebral foramen there may be fibrosis about the nerve root bundles giving rise to symptoms of radiculitis.

"(4) In extreme cases, bony impingement between the tip of the articular process and the pedicle above or the lamina below may cause pain. At first, the tip of the articular process presses against the periosteum-covered bony surface; later, notches may be eroded in the bone by this pressure. The condition is best seen in the stereoscopic 45-degree oblique lumbar view. It may also be recognized by a break in the s-curve as seen in the anteroposterior view." (Hadley[9]) (Fig. 8).

The S-curve.—In the anteroposterior view of an intervertebral disc of normal thickness, in the lower lumbar region, an S-curve can be traced. The line follows the under-surface of the transverse process, and goes down the lateral surface of the inferior articular process of that vertebra; then, crossing the apophyseal joint, it extends down the outer lateral surface of the superior articular process of the body below. In case there is an apophyseal subluxation, there is a jog in the S-curve at the point where the facets have slid past each other.

If the lordosis is marked, subluxations may occur because too much weight is put on the posterior articu-

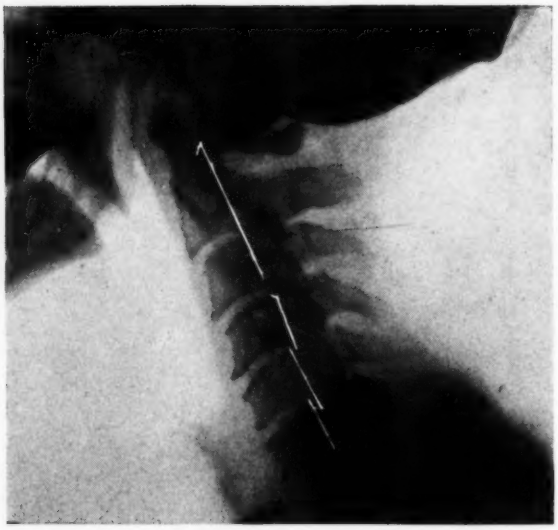

Fig. 9.—X-ray showing loss of symmetrical curve on the posterior margin of the bodies of the vertebrae. The irregularity of the lines indicate subluxations (osteopathic lesions). In this case the subluxations are associated with disc narrowing and were precipitated by trauma.

lations. In scoliosis, if the bodies rotate sufficiently, and the posterior joints are not strained, subluxations do not occur. On the other hand, the curve may not be all body rotation, and then subluxation may occur. Injury and thinning of the discs anteriorly may give a reverse picture of subluxation, and show a pulling-apart of the traumatic surfaces.

The Lateral View.—(Fig. 9). Normally, in the lateral view, there is observed a symmetrical anterior curve. Similarly, there is a parallel symmetrical curve on the posterior aspect of the bodies. When due to various causes, such as trauma, congenital anomalies, arthritis, etc., there is a subluxation of the apophyseal joints. This curved line disappears, and angulation at the point of subluxation is visualized (Fig. 10).

The oblique view is particularly important in the study and diagnosis of the cervical and lumbar regions, since usually with this view normal foramina may be contrasted with abnormal ones, and the extent of subluxation and the amount of diminution in the size of the foramina may be shown.

There are some pathological processes which are caused by trauma, but which may or may not be considered arthritic. These are the result mostly of aseptic necrosis, and include such conditions as osteochondritis dessicans and other allied conditions usually named after the people who first described them, such as Kienboeck's disease, Freiberg's disease, Koehler's disease, Perthes' disease, Osgood-Schlatter's disease, etc. They all affect some constituent part of a joint, and for that reason may cause a mechanical inflammation because of the intrinsic disturbance.

Tuberculosis of the Joints.—Individuals suffering from tuberculous arthritis usually have tuberculous processes elsewhere in the organism. For this reason, Allison and Ghormley[4] suggest that the process in the joint is an allergic manifestation of the tuberculosis elsewhere, and the severity or chronicity of the process depends on the variations in sensitivity or resistance of the individual. For that reason, no two cases are similar.

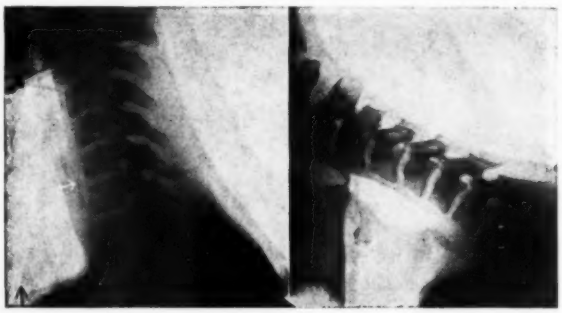

Fig. 10.—Two x-ray views of the cervical spine: left—erect; right—flexed. A subluxation can be distinctly visualized between the sixth and seventh cervical vertebrae, as well as some thinning of the disc. The film taken with the neck in flexion shows the posterior portion of the body of the sixth extending into the foramen between the sixth and seventh, and causing a definite narrowing. This case is one of traumatic arthritis. The patient was relieved after two osteopathic manipulative treatments.

Tuberculous arthritis can be classed under the proliferative type. Its variations depend on the site of the original tubercle formation, and the allergic state of the individual.

According to Krause,[11] an Englishman named Wiseman first described the tuberculous joint, under the title: "White Swelling of Tumor Albus," in 1676. Bell, another Englishman, described two types of tumor albus, one scrofulous, and the other rheumatic, and stated that one affected the bone and the other affected the joint membrane. This was in 1779, and the argument as to where the process first starts in a joint still continues.

Allison and Ghormley[4] say, from a study of over 100 cases of tuberculous arthritis, that the point of origin, i. e., bone, joint, or synovial membrane, makes very little difference, since the various parts are so intimately connected that no matter where the point of origin is, the other portions are affected simultaneously, or at least, in rapid succession.

Pathology: It is believed that when tuberculosis starts in the synovia, it usually begins at the circulus vasculosus, a rich plexus of vessels at the point where the synovial membrane joins the joint capsule. The characteristic of tuberculosis is, of course, the formation of tubercles, with either fibrous caseation, or exudation, and either a spreading of the process, or an encapsulation. For the rest, the picture is one of proliferative arthritis, pannus formation, and so forth. The subchondral invasion usually occurs at the time of synovial invasion, but this will be considered later.

Cartilage: Invasion by the tubercle bacillus is never noted in cartilage. The changes in cartilage are usually slow, and are due to invasion by pannus from below and above, and not to the invasion by the tubercle bacillus, nor does the exudate in the joint form a ferment which destroys the cartilage, as is the case in pyogenic infection. Hence the cartilage at the joint margins is first involved, and the process is slow as compared with that of pyogenic infection, so that the changes seen in the cartilage depend on the severity of the infection and the duration of the disease. The pathological picture is not unlike that of an atypical proliferative arthritis.

Bone: In speaking of joint disease, the bone considered is the cancellous bone which, as pointed out before, is really part of the joint. Sometimes the

tuberculous process starts in the bone, and the site of invasion is at the junction of cartilage, synovia, and bone. This region is the same circulus vasculosus mentioned when we described the synovial membrane, and it can be seen that the bone and synovia are most closely allied at this point. If one region were involved, the process could spread quickly to one adjacent. The formation of a tubercle in this region causes an erosion of the margin, and this can be seen early in the x-ray picture.

In the early stages of tuberculosis, proliferation and granulation of bone marrow take place with the formation of subchondral pannus, and eventually destruction of the zone of provisional calcification; irregularity of the joint space occurs. Sometimes there is tubercle formation in various stages in cancellous bone, with caseation and cavitation; at other times, tubercles appear with a well-defined fibrous encapsulation of each tubercle. There appears to be a generalized atrophy of the trabeculae, and the marrow elements are reduced to fat and connective tissue cells. As the disease progresses, it follows the lines of the joint surface, causing cavitation of the subjacent bone, with caseation. It may go on to ulceration and exudation.

X-ray findings: Ferguson[12], speaking of tuberculous arthritis, suggests that it has a clinico-roentgenographic pattern. "It is that of a lesion tending to progressive and continuous chronic development of (1) effusion, (2) decalcification, (3) atrophy, (4) thin joint-space, and (5) destruction without calcifying reaction."

(1) Effusion is early and progressive, and may be the most prominent feature for a considerable period. This accounts, in a large measure, for the haziness of the joint. Its density is equal to that of the adjacent muscle. The anterior line usually is defined sharply, and there is usually not enough periarticular swelling to obscure the outline. The effusion may be modified by immobilization (usually surgical), and the subsidence of the lesion. The amount of absorption of the effusion is an index to the cure.

The effusion may break through the capsule and follow the fascial planes and penetrate them. This is called an ichor pocket, the density of which is increased beyond that of the adjacent muscles. Calcareous nodules may form at the most dependent part of the abscess. Size, shape, density and distribution of these deposits are characteristic of tuberculosis. The ichor pockets vary in shape. They resorb more slowly than joint lesions, and in later life, often are seen as calcified foci. Ferguson[12] says that in the spine they are the most important diagnostic sign. Their size, in proportion to the amount of destruction present, does not tend to be duplicated in other destructive diseases, such as tumors or pyogenic lesions.

(2) Decalcification may be general or local. It usually follows effusion and is an important x-ray finding. The exception to the rule is the dry type of tuberculous arthritis, the so-called "caries sicca." In this, no effusion is present. The general decalcification is a result of poor circulation, inability to use the part, and toxic absorption. The first evidence of decalcification may be a loss of density of the bone, the so-called "diminished density." In a joint such as the wrist, as compared with normal findings, there is a haziness of several or all of the small bones and it is impossible to procure a contrasting film.

(3) Atrophy: Soft-tissue atrophy usually appears with decalcification, but effusion usually precedes it, and the longer the process lasts, the longer the atrophy lasts. When the process is cured, atrophy disappears. Ferguson[12] says that soft tissue atrophy is highly significant in diagnosis. He claims: "If atrophy is slight in proportion to the development of effusion, decalcification, and destruction, it is probably a lesion more acute than tuberculosis."

(4) Thin Joint-Space: This is often the most important x-ray finding. It may not be visualized at first. By serial roentgenography it will be visualized, and proportionally much sooner than destruction or decalcification. This depends, of course, on whether the infection starts in the synovia or in the bone. This is especially important in tuberculosis of the spine, because the tissue is so thick that early changes can only be seen in the cartilage. Ferguson[12] says: "When one intervertebral disc is thinner than the one above and below, and when there are no other changes present about the disc, or in the vertebral arches, it is strong evidence that tuberculosis is present. A thin disc, with effusion, and no other bone change, is almost positive evidence of tuberculosis. Growth of the epiphysis is often stimulated by synovitis of various chronic diseases, and later atrophy occurs."

(5) Bone destruction, without attempt at repair, plus the other findings noted, is the x-ray ensemble when considering bone tuberculosis. The destruction may take the form of marginal erosion, or deep cavitation, caused by tubercle invasion. Furthermore, there is no attempt at reparative calcification, such as is seen in most other types of chronic bone infection.

The distribution of the destruction is important, particularly in tuberculosis of the hip. At this joint tuberculosis usually causes cavitation of the acetabulum, with little or less destruction of the femoral head and neck. Pyogenic infection of the hip tends to the opposite distribution: more extensive destruction in the femur than in the floor of the acetabulum.

Pyogenic Arthritis.—(Fig. 11). This includes all types of joint disease caused by known bacteria, other than tuberculosis and syphilis. This group has one common property, which is that of producing pus. Here, again, the extent of involvement depends on the virulence of the infection and the resistance of the individual. Because of these imponderables, it is difficult to give a description which will fit all cases.

Pathologically this type of arthritis resembles the proliferative arthritis. There is one point of difference between them, however. Phemister[13] has shown experimentally that the pyogenic organism is capable of producing ferments in the joints, which digest the articular cartilage. This explains, for instance, the speed of the destruction of this cartilage in a virulent infection, and why cartilage is destroyed more slowly in tuberculosis, since the tubercle bacillus is incapable of causing digestion of hyaline cartilage.

The extent of the involvement varies. Sometimes, when the infection is mild, the process clears up quickly; at other times it follows a virulent course, which eventuates in complete destruction of the joint and extension into the surrounding tissue. The synovial membrane is attacked and develops pannus, as does the bone marrow. The cartilage is destroyed by both of these elements, plus the pyogenic ferment, as noted previously. The adjacent bone may be necrosed and periarticular swelling and reaction in the

Fig. 11.—This x-ray shows the normal left hip and pelvis, contrasted with pyogenic infection of the right side, due to staphylococcus aureus. The hip joint is completely destroyed; fusion has occurred; the pelvis is invaded, and the right sacroiliac joint is in the process of destruction. The duration of this infection has been ten months.

tissue are noted. If the process is extremely virulent, there will be no bone reaction. Usually there is such a reaction with the formation of new bone, and at the chronic stage the arthritis now comes to resemble the hypertrophic type of arthritis.

X-ray findings: Early signs are soft tissue swelling and effusion, the latter not being well-defined. The process then may subside, and the tissues return to normal. If the process persists, there will be found decalcification of the ends of the bones; narrowing of the joint space (due to cartilage destruction); continuing, there will be destruction of the bone, with erosions, and irregularity of the articular surface, with possible destruction of the joint surface, and subluxation. When repair begins, hypertrophic changes are noted. The end-result either may resemble hypertrophic arthritis, or there may be fusion, as seen in the atrophic type. Often there is a mixture of the two types.

Luetic Arthritis.—Syphilis in the joint is not to be confused with Charcot's joint, which is neurotrophic in origin, and not considered an infectious process per se.

This type resembles the degenerative arthrites. It is chronic in character and affects the synovia, causing considerable swelling of the joint but no pannus. The cartilage usually is not affected (although it may eventually be involved), so that with proper treatment recovery is often complete. There are also bone changes, particularly periosteal changes, and the characteristic x-ray picture is one of periostitis at the joint margin, with periarticular swelling and joint effusion. Periostitis may occur in other joint conditions, but with this there is joint destruction which is usually absent in lues.

Neurotrophic Arthritis.—Charcot's joint and syringomyelia are the most common two types of joint disease with which we are familiar. Since they are often a complication of trauma, and since their diagnosis often is overlooked, we feel that a discussion here is pertinent. Any joint may be involved, but

Fig. 12.—X-ray of a case of gout of one year's duration. It shows erosion of the head of the first metatarsal bone of one foot, as compared with the other, which is uninvolved; also note productivity on the inner aspect of the same head. Such a finding is always suspicious of gout, and clinical studies are necessary to prove it to be otherwise.

those most frequently affected are the knee, ankle, hip, and spine, and since all of these are weight-bearing, they show similar findings. The characteristic finding is one of inordinate destruction of the joint; one which would, under normal conditions, cause extreme pain, but in this condition there is very little. The picture is one of extensive joint effusion, and static swelling in the soft tissue, subluxation, dislocation, and even fracture, either of the large bones or of particles of the bone. There is decalcification of the bone associated with bone production, and much detritus in the joint, with calcified particles scattered throughout the effusion. The bone adjacent to the joint is usually thickened, and there is usually a periosteal reaction.

Baetjer and Waters[14] maintain that "There are only two conditions in which disintegration of a joint exists without great pain, and the most common of these is Charcot's joint."

Syringomyelia usually affects the joints of the upper extremity, and gives a picture of distortion and disorganization of the joint, minus the damage done such a joint by weight-bearing. In addition to disorganization, there are often trophic changes in the bone, which permit widening of the joint surfaces and a complete change in the anatomical appearance. There is little or no periarticular atrophy present, and Baetjer and Waters[14] are of the opinion that any case completely disorganized, and showing an absence of bone or periarticular atrophy, should be considered either a Charcot's joint or a syringomyelia.

Gout.—(Fig. 12). Gout is a systemic condition due to an excess of uric acid in the blood. The joint reaction is dependent on the local irritation resulting from this excess. The joint pathology is one of combined arthritis, which consists of destruction of the articular cartilage, hyperplasia of the synovia, and some erosion of the marginal bone, with deposit of urates in the various tissues.

X-ray Findings: In the acute stage there is the usual reaction of the joint, i.e., swelling and effusion. When the condition becomes more chronic, erosions at the joint margins occur, which must be differentiated from atrophic arthritis. This differentiation can be made by noting lack of systemic decalcification observed in rheumatoid arthritis. At later stages there is bone reaction, and productivity with spur forma-

tion may be seen. It is an axiom that gout particularly involves the phalanges of the great toe, but may affect any other joint.

SUMMARY

Descriptions of both pathological and radiological findings have been given of the two major types of arthritis—the proliferative and degenerative—and the similarity of various other forms of arthritis to one or the other major type has been shown.

The importance of traumatic arthritis in the practice of osteopathic physicians is pointed out, and the visualization of spinal subluxations is emphasized. Various methods of revealing the presence of spinal subluxations (osteopathic joint lesions) on the x-ray films are given.

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Some Physiological Considerations in Fever Treatment of Arthritis

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A study of contemporary literature on physiotherapy, or in fact, on any form of treatment, leads to the belief that we are turning back from the extreme specialization and differentiation, both in diagnosis and in treatment, which has marked recent decades. There now seems to be a wholehearted trend toward determining a common ground of general etiologic considerations from which disease springs and on which treatment is based. As a result, the physiologic considerations with which we so thoroughly concern ourselves in the main, in the matter of producing our results in the treatment of arthritis and kindred chronic diseases, becomes more and more an object of close scrutiny. We harken back to cellular processes (the problem of metabolism), and recognize the fact that everything in regard to health, disease, and treatment must emanate from the reactions and chemical processes of individual cells. This should be regarded, we think, as a wholesome movement away from the specious, somewhat mystical, concepts of the past, in which the body has been considered as a whole and doctored empirically in an attempt to produce a hoped-for reaction, which seems to have been expected on a mathematical basis; that if a given thing was done, the body as a whole would so respond, the results being produced according to the treatment extended.

We now have a considerable amount of data available from our biologists, histologists and biochemists on the activities of the individual cell, and it seems to me that it might be permissible to extend to the cell a little more than the concept of a fixed unit which reacts favorably or unfavorably according to the chemical environment in which its protoplasm and nucleus are placed. We ascribe to the human body habit phases, and describe both the psychological (including neurological) and physiological habits of the body in considerable detail. It would seem that we could ascribe to the individual cell as well the power to develop habits and that in fact viewing tissue habit upon the basis of a total entity, and denying the individual cell such a possibility of reaction, is hardly fair.

As a body becomes chronically ill and its internal economy becomes altered adversely, radically, and apparently permanently, there is no doubt that in addition to its response to innervation and its attitude toward metabolism, there also is a biochemical retrenchment occurring in the cell. It is conceivable that such cells, over a period of years, could so far develop a habit of committing themselves to this retrenchment, and this mode of living, that when proper normalization of the body is secured, and all the factors needed so far as we can see from our outside viewpoint are supplied, they still either would refuse to turn, or would be incapable of turning, back to their normal attitude. Many view this refusal as an irreversible factor caused by disease processes and consider it to be the result of permanent cellular change. The concept that in chronic disease cellular activity is definitely lowered is, we believe, rather well agreed upon.

Many of our observations seem to lend credibility to the theory that the cell does develop pernicious habits of living, so that ordinarily it does not respond to what we believe to be right food and the proper mechanical treatment. This leads us to ask what we can do to turn back the cells from continued bad habits developed through adverse circumstances, and make them once more respond to normal metabolic activity and trophism, thus freeing them from many conditions considered, on the basis of symptoms, incurable, or responding but little to usual methods of treatment.

One of the main things we feel to be vital is increased cell activity, if it can be produced without the cell undergoing some chemical or drug reaction with its resultant toxicity, which would neutralize any good results obtained. Fever therapy, properly ad-

ministered, seems to offer a program whereby cellular activity can be raised en masse with little or no resultant backlash or bad reaction.

It is common knowledge that the levels of cell activity alter with the different periods of life. The concatenations of environment, which pursue the individual throughout these periods, if adverse at some particularly critical time, are well able to cause lowered cell activity, which, maintained over a sufficiently long period, may result in the production of bad cell habits. Once these bad habits are established, they will continue along with life changes, such as puberty and the menopause. Many of what are described to us, and recognized by us, as disease—clinical entities—come on at these times of change. It would seem that after a long period in which the attacker on one hand and the resistance of the individual on the other, have been deadlocked, the body having no great help to carry the war over to a successful conclusion, the individual tissues through force of necessity having had to retrench so long that they cannot get out of the habit, give way and the persistence of symptoms and the development of pathological conditions prevail.

The fact that under artificial fever therapy many conditions hitherto thought of as incurable by modern methods have been restored, strengthens the belief in the cell "habit" theory, and that fever therapy offers the cells what is required to enable them to break their faulty habits.

The total capillary beds of the body, if divided and laid out, would cover an area well over an acre. At no time, perhaps, in normal living is any considerable fraction of the capillary beds open and actively functioning at one time. Therefore, we do have considerable areas operating at a static or semistatic level in which toxicity and stasis can abound to a great extent. With fever therapy it would appear from graphs plotted from records kept on a properly given treatment that bed after bed of capillaries dilate and increase so that in time practically all of them, as far as the body can permit, open and function at the same time with generalized flushing out of all of the general small fine circulation of the body. I wish to make a reservation at this time so that anatomists and histologists will not contend that the statement is too broad as there are doubtless some specialized forms of blood vessels that open and close on such highly complicated physiological grounds, such as the proliferative mechanism of the erythrocytes, that even fever therapy cannot particularly affect them, that is, fever produced by artificial methods and not by disease. But it would seem reasonable to believe that if these were not thrown open, at least their action and speed of movement would be accelerated definitely.

The point we would make, however, is that by means of artificial fever, the body, over periods of time, is caused to do two things: (1) There is maintained artificially a metabolic rate, normal or slightly above, which the body cannot achieve through any other manner. Holding the body at this level enables it perhaps for the first time in years after a siege of chronic illness, to function on a level to which it could not raise itself, and to which it could not be raised through any other known agency. Though the relative period of time covered in the actual fever treatment—the time during which the temperature is elevated—is rather short compared with the total time the patient is under treatment, yet the cell has had an opportunity to exert itself in the direction already indicated—the overcoming of its evil habits. We do not believe, however, that this is the total, or even the greatest, value of artificial fever in its effect on the individual cell. The greater and lasting value is found in (2) The constant repetition of the return to normal metabolic rate or above in time restores the original state of the cell, that is, its habits of functioning, before disease became chronic. The bad habit of staying below normal, or near it, is erased, and the total result of treatment is proportionate. Thus, through the reversal of evil habits, and the maintenance, or the repetition at intervals, of a physiologic state of a desirable nature, we alter previous abnormal cellular habits to those both gainful and normal. With artificial fever treatment it would seem that we are enabled to overcome a difficult tissue state, one of permanently lowered vitality, through changing the habits of the cells of which it is composed—habits of retrenchment, of lowered activity, and failing vitality over a period of years.

A variable in the equation of health and disease that must be considered is the matter of constitution. The individual with a constitutional inadequacy has a handicap which must not be overlooked.

As we know, individuals vary according to their bodily shapes, with certain inherent strengths and weaknesses of the body mechanism that manifest themselves as the years pass and the internal destiny of the body is made evident. The variety of the picture is increased, of course, by environmental influences. It would seem that there is a definite somatic activity inherent in the individual cell beyond which it cannot go, or in excess of which it cannot respond, regardless of the therapy used. There comes a time, earlier in some individuals and later in others, when the life force or power of the cell has been used up and its regenerative and functional power is definitely that of something nearing its end. There would appear to be little that can be done to force this cell to commence to live again as a young, functioning thing. This state, of course, must not be confused with that of retrenched cellular activity. The constitutional type of the individual and his history, including some knowledge of his heredity, should guide one in deciding as to the advisability of treatment.

Another point for consideration in the matter of artificial fever therapy is the basic irritability of protoplasm. We know that protoplasm exerts itself to its best ability, or maximum, when it is irritated in some particular way that still permits it to make a response. But a cell is like a human being in that an individual beset with one problem usually can handle it adequately if it can be handled at all. However, if beset with a multitude of problems to such an extent that there seems to be no way out, the common thing is to give up the whole sorry mess and let everything slide. Likewise, multiple irritation to protoplasm, or attacking it from several different angles simultaneously, is not the most expedient thing if the irritation is designed to create a reaction whose end result is a return to normal function. The matter of treatment should be considered to some extent from this standpoint, and when some definite mighty attempt is made along a particular therapeutic line,

it would be well not to attempt too many other simultaneous therapeutic advances. If a cell has its entire environment and relation upset by radical changes in diet, then increasingly by that of fever therapy, and also by too great a trophic and neurologic impetus through osteopathic manipulative treatment or some other agency, there is a distinct possibility that the cell, having its state of living attacked from so many different avenues at one time, may react unfavorably.

Or it may refuse to change at all, and cling all the more firmly to its program of retrenchment and abnormal functional habit. Anything startled or highly irritated will stay close to that which it has done in the past, and if freed from that intuitive refuge its reaction is largely unpredictable. In short, perhaps, we do the body more harm than good when we treat it by trying entirely too heroic and varied therapies in the single case, and cause it to grow more pernicious in its habits and more aggravated in its pathological condition.

It is our desire, of course, to produce one single cellular response to treatment—an increase in cell activity and a return to health. But the cell cannot be expected to have any more mental ability than we as functioning individuals have. If we were put upon to rouse ourselves from our habits and daily routine to a new regimen of thinking, activity, and so on, from forty different directions at once, I doubt very much that we would do the thing expected of us. It is hard to see why a body cell should have more intelligence than a thinking individual, or why we should expect it to make a response to radical and varied stimuli applied in profusion and at the same time.

In short, the preferential approach would seem to be one in which the primary form of treatment would be selected to produce the desired reaction in the cell, and a guarded and careful introduction of secondary treatment made. The second modality or approach would seem to be considered best in the light of proper timing in reference to the response to the first. By timing we mean this: after a cell has developed a particular reaction to artificial fever, for instance, and is heading toward normal, then other allied things could be put upon it to accelerate the induced reaction. But the reaction must be developed and on its way in dependable, consistent, increasing, measure before any great amount of secondary or synergistic treatment should be applied.

It is our contention that the reactions of the body can be studied as well through the laboratory as by any other means, so far as its response to treatment is concerned. In studying the blood plasma at length under fever therapy, it has been found invariably that when a person is overtreated the plasma, as far as its colloidal equilibrium is concerned, returns to a state rather near that in which it was previous to treatment. Admitting in its forced return an increased retrenchment of cell activity, this hampers even more a successful conclusion of the case. Overtreatment, instead of bringing about a state of cell activity which will continue toward normalization, brings about a return to a condition comparable with the original state, probably with an increase in the evil habit of the cells, increasing in their bewilderment, their determination to hold fast to their previous program of retrenchment.

In conclusion it would seem to behoove all of us who use fever therapy, or intend to do so, to avoid too much running after the new, the varied, and the spectacular. To many things done to the body at one time do not produce the result we desire, but on the other hand, due to the nature of the machinery of life, make the reaction we earnestly desire an impossibility. It would be best to select the few things that constitute what is known as "thermogenics,"† and are generally agreed upon, and learn as far as possible the order in which they should be applied in a given case, as well as developing a high degree of skill in their administration. While we do not plead specificity flatly, yet we do not praise multiplicity.

The prime thing is to prod or elevate the body toward a normal habit and activity on the part of the cells, allowing due time and using good common sense in one's expectations and as to how soon they may be realized. We must avoid smothering the body with blankets of arbitrary therapy producing in the inevitable cellular irritation a negation to treatment and a possible increased tendency of the body to stay chronically ill.

SUMMARY

1. The cells of the body are creatures of habit. Chronic diseases forcing retrenchment of cells in time develop a definite habit of living at an altered abnormal metabolic rate.

2. Fever therapy, by repeatedly accelerating the rate of cellular living, alters cellular habit toward one of right or normal living. The body once developing this tendency toward normal becomes increasingly healthy.

3. Possibly the development of chronic conditions may be due to a deadlock between cellular activity and resistance, and the inroads of developing dysfunction, permitting the development of pernicious cell habit.

4. The factor of constitutional inadequacies must be taken into account in every individual equation in chronic disease, that the most suitable form of treatment may be selected and disappointment minimized.

5. The intention to heal, due to increased cellular activity, is brought about by a reaction of the cell, and continuing to react properly tends toward normal. A multiplicity of stimuli may produce a negation of response or none at all. Overtreatment is worse than none.

6. The intent of the physician should be toward the production of a reasonable order in the whole matter of which is primary and which secondary in bringing about a cell reaction the tendency of which is toward normal, and which should be used to enhance the reaction in the proper time and place, once the progress toward normal is established.

La Salle Theater Building.

†"Thermogenics" as Deason uses the term in THE JOURNAL OF THE A.O.A. for May, 1934, includes: "(1) The production of heat within the living body according to determined biological reactions; (2) osteopathic manipulative treatment; (3) osteopathic surgery when indicated; (4) colonic treatment; (5) specific dietary [including vitamin—R.C.S.] adjustment; (6) hydrotherapy; (7) solar therapy; (8) . . . 'manipulative thermic therapy'—osteopathic corrective treatment administered following each thermogenic treatment while the patient is still warm and relaxed."

The Development of Palpation*

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PART II

In part one we dealt with the applied physiology of palpation. We now move into a different aspect of the field in considering just how far it is possible to go in diagnosis by palpation, and take up some of the methods of sharpening touch appreciation.

Many osteopathic writers[10] have mentioned the value of touch. One of these, Dr. Hedley V. Carter, describes the feel of the skin over the back in lung conditions. We take the liberty of quoting his entire article, "An Unique Diagnostic Aid":[11]

"The list of reflexes useful in diagnoses includes cutaneous, plantar extension, tendon—or deep colonic and tonic spasms, and electrical reactions.

"To the list of cutaneous reflexes I believe we may add, tentatively at least, another osteopathic discovery. While Head, Mackenzie, Pottenger and others have noted the frequent hyperalgesia of the skin in diseases of the viscera, sometimes exquisite in cases of pulmonary tuberculosis and pleurisy, I have been unable to find prior mention of a peculiar and constant skin phenomenon which outlines on the surface the extent of deeper situated pathology.

"This surface sign is quickly apparent to osteopathically trained fingers with their educated tactile sense. The technic consists in noting an increased resistance or drag and roughness of the skin as the examining fingers are lightly but not too delicately drawn over a morbid region. The extent of the involvement may be delineated by the smoother normal feel of the skin over contiguous healthy regions.

"A few experiments in your daily work will readily enable you to recognize this peculiar diagnostic evidence. For example: before deeper palpation of spinal lesions, draw the fingers of one hand down over the bared back of a patient and note any areas of increased resistance of the skin. This should be done with a light, even pressure. The feeling has been described as a 'moist rubber' sensation. Then check your findings by the usual methods of locating spinal lesions.

"You may test your ability to appreciate a 'positive' sign dissipating the sensation momentarily by touching the patient with the other hand. A positive reflex, reaction, or sign reappears over a morbid region when the 'short circuiting' influence, either of the examiner's other hand or that of an assistant, is removed. There is no change over a healthy region.

"It is extraordinary how accurate this localization has been proven by orthodox diagnostic methods, including the roentgen ray. Due to their accessibility, diseased teeth and tonsils are good subjects for experimentation as the findings are quickly proved. Pathological regions in the lungs are also readily outlined and proved by percussion and auscultation.

"Many patients are able to feel a 'positive' sign, particularly on non-hairy areas. Without making an explanation, use the technic described and ask if the patient notices any difference in the 'drag' of the fingers before and while 'short circuiting.' Some sensitive people will declare the skin over a pathological region 'feels like very fine sandpaper' or 'emery dust.'

"Another peculiarity is that these 'positive' areas may be defined by the adhesiveness of non-metallic instruments such as a pencil shaft, stiffened rubber tubing, glass rod, etc., as they are drawn over the skin. 'Shorting' causes them to slide as over 'negative' areas. (I use the term 'short circuiting' for its descriptive qualities and for lack of a better one.)

"Permit me to add that this procedure has nothing to do with any system of diagnostic reactions. It is, I think, purely an osteopathic discovery. The patient may be in any position relative to the force of gravity or to the points of the compass.

"This method of localization has been used and tested for several years. It has been demonstrated and taught to a number of osteopathic physicians who have amply corroborated its practicability.

"The explanation of this peculiar objective symptom is mere conjecture. Some years ago an article entitled 'The Electropathology of Local Inflammation' was distributed by the manufactures of a well-known product widely used by the osteopathic profession. This short treatise presented the body as having in the brain a generator of neuro-electricity, in the nerves a series of conductors insulated by the nerve sheaths to maintain nerve energy at a certain pressure. The ganglia function as storage cells or condensers and the skin acts as an insulator, though a poor one.

"I believe it is Crile who suggests, in referring to electromagnetic phenomena of the body, that the liver might be considered as one pole and the brain as the opposite pole of a mass unit.

"It has been stated that the intimacy between electricity and the metabolism of a fully ionized cell is so delicate that it has been possible to start cell division in the ovum of a sea urchin by electrochemical stimulus. The groups of ions in the protoplasmic membrane surrounding the cell exert a selective power regulating absorption and excretion which can only take place when the material without the cell meets the electrical requirment, opposite polarity, to the material within the cell.

"If disease be considered as electropathology, it may be presumed that electrochemical 'losses' are manifest on the surface due to a lowered electrical resistance of the skin, which is at best an inefficient

*Delivered by Dr. Stinson before the annual convention of the Middle Atlantic States Osteopathic Association, Washington, D. C., October 4, 1940. The program was sponsored by the Osteopathic Manipulative Therapeutic and Clinical Research Association.

insulator. Wherein may lie the explanation that the 'Carter surface sign' is a practical diagnostic measure and is surprisingly definitive."

From nonosteopathic medical sources, perhaps the most detailed literature is that of Dr. Pottenger, whom we all recognize for his work on visceral reflexes. We want to quote from his book, "Muscle Spasm and Degeneration in Intrathoracic Inflammations and Light Touch Palpation."[12]

"LIGHT TOUCH PALPATION

"A discussion of the possibility and practicability of delimiting normal organs and of diagnosticating diseased conditions in organs, especially within the chest and abdomen, by very light palpation when such normal organs and diseased conditions exhibit a density of tissue differing from neighboring organs or parts of organs.

"While making a clinical study of the muscle changes previously described, I noted that these changes were best detected by a very light touch. Further study showed that by this very light touch the examiner was not only able to determine differences in the superficial tissues, but, to my great surprise, he was also able to detect the differences in density of tissues which were situated within the great cavities of the body at a distance from the surface walls. The heart, liver, stomach (within two or three hours after a meal and even without food, provided it contains some gas), abdominal tumors, mediastinal tumors, infiltrations of the lung (whether due to tuberculosis, pneumonia, actinomycosis, syphilis, or cancer), and effusions either pleural or peritoneal can be accurately outlined by *light touch palpation*, a touch so light that it scarcely causes an indentation of the superficial tissues.

"The boundaries of the heart were the ones that I detected first. I found that by simple touch I could distinguish the outline of this organ from the surrounding tissues. Inasmuch as I was studying the reflex contraction of the muscles at the time, I at first thought this must be a skin reflex, due to the contraction of the erectores pili, and so described it as a new physical sign, probably a skin reflex; but, before my paper was published, I had determined that it was not a reflex at all, consequently not a new physical sign, only a new method of applying palpation."

There are several pages in which experiences in using this method are described and the findings checked by post mortem and x-ray examinations. A long discussion of the relative merits of light touch and percussion and a listing of all the evidence leads to the conclusion that there is greater accuracy in light touch.

The methods of outlining the heart, instructions for differentiating heart and lung tissues, and for recognizing various types of pathology are described minutely. Several pages are devoted to the abdominal contents, with specific directions for detecting abdominal and pelvic tumors and peritoneal effusions.

In another part of the book the author pictures the changes that take place in the muscles of the spine and thorax in pulmonary tuberculosis.

We quote again to get another important idea, and to get the author's summary.

"In employing *light touch palpation* considerable care is necessary at first, until the examiner is fully aware of what he is attempting to feel. He should remember that he is attempting to recognize slight differences. In outlining organs or differences in density or tissues, I have found it better to examine the part which is presumably of lesser density first, and pass from it to the organ or part of greater density.

"One thing that surprised me very much was the fact that *light touch palpation* could be relied upon to give accurate results through bone as well as soft tissues. This fact led me to make further experiments. While studying percussion I practiced upon tables and chairs, locating the legs and reinforcing strips; so I tried to do the same by palpation and found that it is possible to note a difference in resistance on palpation also when palpating over the chair and table legs and those parts which are reinforced. . .

"Quoting from one of my former papers: 'I have found the best method of procedure in endeavoring to outline the deeper solid organs by *light touch palpation* to be as follows:

"'1. Always palpate wholly, either in the intercostal spaces or over the ribs. This can be applied to the liver and spleen, as well as the heart, because of the oblique direction of the ribs.

"'2. Begin palpating beyond the border of the organ and approach it slowly. When the border is reached an increased resistance is at once noted, the degree varying in different chests.

"'3. The palpating fingers must not be moved too rapidly, or confusions will result. Sufficient time must be allowed to concentrate the mind on the sensation produced at each touch. Concentration is very important, especially when the change is slight, as would be noted in a heart or liver border covered by emphysematous lung in a patient with thick chest walls.'"

We all know that we could get more information from palpating a spine at the end of six months of practice than we did at first, and very much more at the end of five years. But we need some regular methodical things to do as a program of education. Here are a few practical ideas:

We have the general idea from Pottenger that we should be able to detect varying densities with our fingers. Many specialists in commercial lines are able to do this as part of their job. Wood workers detect the kind of wood by feel; most clothing buyers can detect the quality of wool and other cloth by feel. We can practice most of these things.

Can you put your hand in your pocket and pick out heads and tails on the coins? Some gamblers depend on this skill for winning the toss of the coin. Can you pick the various coins—penny, nickel, dime, quarter? That should be an easy method of training the fingers, for it can be done while waiting for a car or idly chatting.

How many of your keys can you pick out by touch? Do you have to have a light to find a keyhole at night? Here again we have some practice tricks which are usually readily at hand.

Some of the older doctors, among them Dr. Still, laughed at us as senior students with our stethoscopes and thermometers. They depended on a sense of touch for determining temperatures. Can you feel the skin of a patient and tell what his temperature is? One

of us, Dr. Allen, practices locating a youngster in the dark by passing his hand just over the baby and picking up his position by the changed air temperature of body heat and the flow of air from breathing. That is something of a variation of the ability of the seaman who detects wind direction by moistening a finger and holding it up.

One anatomy professor was known to carry around a pocketful of carpal bones, mixed rights and lefts, male and female, and woe to the student who could not sort them out properly.

Along this line, Dr. Schwab used to require that each student in his technic classes do the actual work of putting together an "articulated spine." This required about twenty hours of patient labor in fitting sponge rubber for the intervertebral discs, hollow tubing for the cord and flat rubber for the anterior common ligament. In doing this work the students learned much of the "feel" of the size, shape and articulations of the spine.

There are a number of methods for acquiring a keen sense of touch. First let us discuss the matter of care of the hands. It is possible to improve touch reception by keeping the joints of the elbow, wrist, hand and fingers very flexible. Sometimes we can get help by immersing the hands in fairly warm water for a few minutes. Most physicians have a favorite application for keeping the skin of the fingers soft, with the nails trimmed fairly short. Practically all of us have had to give up some of the things we like to do with hard tools because of the effect on our hands. Many have found that delicate proprioceptive feel diminished by such things as ball games, golf, whittling, and even long auto drives. Some of this can be overcome by the use of gloves, but probably not all of the muscle, joint, and tendon sense is protected thus.

Right here is a good place to discuss the need for osteopathic manipulative treatment ourselves. We who use our hands, arms, and shoulders need periodic care for the fatigue, the overuse, and the small injuries which we acquire day by day. The region of the spine giving origin to the nerves of the brachial plexus should receive constant attention and adjustment when necessary. Not only the muscular and the circulatory effects may be perceived; there is also a distinct growth in touch appreciation from this routine care.

Do you have days when your touch is better than other days? And is it easier on such days to make adjustments? That should point out to you the times when treatment is necessary. We should be able to "take our own medicine." One way to do it is to cultivate a friendship among our own group, and exchange treatment at least once a week.

Again, the matter of a vacation worries some of us. It is far better to make vacation a matter of a day or two a week for two or three months than to go away for thirty days and allow our hands to lose some of their trained cunning.

Safe breakers are said to use sandpaper on their finger tips to make them more sensitive. We may not get so far along as this, but certainly we do not want our hands to develop a hard, fibrous covering from the rough things we do.

We have already gone over Pottenger's suggestions. Let us try some of them one at a time.

Table top—or chair arm—feel for support from floor.

Coins—pick heads and tails; distinguish penny, nickel, dime and quarter. Pick date lines.

Paper—feel for ruled lines as in an appointment book—printed lines of any book or paper. Outline of illustrations and figures.

Dr. Allen suggests the following test: Arrange two small bowls with small number of bird shot in each. Have someone add or take away a few shot and test your ability to recognize the change in weight. Note the smallest perceptible variation and keep practicing until you can detect the difference of one shot.

All common objects give us something on which to practice touch. Do you shave by sight or feel? Try shaving in the dark.

While driving your car, have you learned to pick up the vibrations of the motor? A little practice will enable you to tell whether or not the motor is running smoothly, and sometimes will help to determine a too rich or too lean gas mixture. Certainly you should be able to pick up a "missing cylinder."

Tire pressures should come to your touch very readily. Slight differences in the front tire pressures will be easy. Recently I told a filling station attendant that there was about three pounds difference in the pressure in my rear tires. He checked and found just two pounds.

Can you run a finger over the tops of a folder of safety matches and count them? You can with a little practice.

Professional dice throwers pick the numbers on the dice with their hands closed. Card sharks are said to "read" the cards with their finger tips while dealing. Some of us have been able to identify the characters in the cheaper grades of playing cards, but not accurately when dealing at the customary rate of speed.

Many of the simpler tricks of the prestidigitators afford not only practice in touch, but also skill in muscular coordination.

Musical talents afford opportunity for much that we need in our hands and fingers. Balance tricks require "muscle sense" as well as touch.

Try picking a hair under a sheet of paper. Then add a couple of sheets. Next note the length of the hair. If you get really expert try distinguishing between human and animal hair and between coarse and fine hair. If you get really good, try counting grains of sand.

Dr. Allen calls some of this "tactual gourmandizing."

Finally, two things: first, think of your world in terms of touch, and second, evolve and use exercises for both tactual acuity and kinesthetic sense.

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GOLDTHWAIT "DISCOVERS" RIB LESIONS

Joel E. Goldthwait, M.D., noted Boston orthopedist, describes in the *New England Journal of Medicine* for October 10, 1940,[1] what osteopathic physicians have been diagnosing and treating for many years as rib lesions. Goldthwait calls them strains of the costovertebral and costotransverse joints. He says that "once it is realized that these are true joints, subject to strain from overuse or violence exactly as with any other joint, it will be understood why they are liable to disease or injury like any other joint." He discusses the anatomy of these joints, and goes on to describe the range of motion of the ribs. He calculates the extreme range of motion as permitting movement of the thorax in full respiration to yield between 7 and 12 cm. difference in chest circumference. "To ensure the normal use of these joints," he says, "the neutral position, that is, one about midway between that resulting from full inspiration and that resulting from full expiration, should be maintained, and to obtain this the ribs should slope downward from the spine about 30 degrees."

Reproductions of x-ray films are provided in the article showing the position of the ribs when the chest sags and the shoulders are rounded. Goldthwait brings out the fact that the position of a rib when the chest sags depends to a considerable extent upon the position of the costotransverse joint, "since if the articulation is on the top of the transverse process, sagging of the rib must either rotate the head out of its normal position or act as a fulcrum and pry it up above that position." Regardless of the location of the costotransverse joint, however, when the rib sags "this joint is used as a fulcrum and the rib is either twisted, thus rotating the head abnormally, or actually forced into a different position from the normal one."

In discussing symptoms resulting from mechanical strain of the costrovertebral joints, the writer says that these may be referred to the region of the joints or along the sides of the chest following the course of the intercostal nerve. Circulatory disturbances also often are seen in connection with the irritation of these joints which is explained by the fact that "at the side of the spine, adjacent to the costovertebral joint, there is not only the root of the nerve supplying sensory and motor control, but also a ganglion of the sympathetic nervous system which is connected with the other cells of the system."

The two floating ribs, not being supported in front by the costosternal cartilage, are able to move about much more and when the chest sags may cause much greater irritation of the nerve root and trunks than those of the remaining ten ribs above. The pain from mechanical strain of these ribs may be referred to the sides of the abdomen from the pubic bone to the crest of the ilium and be mistaken for appendicitis and other abdominal conditions. Goldthwait calls attention to the articles of Carnett[2] who has written extensively on intercostal neuralgia as a cause of abdominal pain and tenderness.

Treatment of the condition according to Goldthwait "consists in having the body so held that the neutral position will be with the ribs midway between the postion of full inspiration and that of full expiration. Often in order to obtain this effect, mechanical supports are needed until the joints have recovered from their irritation, or until the muscles have been so developed that the neutral, normal position is possible."

Not a word is said in Goldthwait's article about manual adjustment of ribs to replace them in their normal positions. In one of several brief case reports accompanying the article the statement is made that "relief was obtained by placing the patient in a position in which the rib fell forward, the correction of its twist being made by the mere sag of the body. No force was required to correct it." An osteopathic physician might comment to the effect that not often does a patient obtain relief as easily as that. In the majority of cases, specific manipulative efforts are needed to replace the rib.

The subject of rib malalignments has been discussed in osteopathic periodicals and textbooks ever since Dr. Andrew Taylor Still began to teach the science of osteopathy. In one of Dr. Still's first books, "The Philosophy and Mechanical Principles of Osteopathy,"[3] published in 1902, in the chapter on "The Thorax," the author refers to luxations, twists, strains, or dislocations of the ribs which may interfere with the function of the intercostal nerves. In his "Osteopathy, Research and Practice,"[4] published in 1910, he describes the technic for adjusting rib lesions. One method he gives is to place the patient on his back on a table and bring the arm on the affected side out at a right angle. Describing further steps he says, "I place my thigh close up in the axillary region and push the arm upward putting the serratus magnus on a strain. . . . At the same time I pass my hand back

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3. Still, Andrew Taylor: The Philosophy and Mechanical Principles of Osteopathy. Hudson-Kimberly Publishing Co., Kansas City, Mo., 1902, pp. 128-129.

4. Still, Andrew Taylor: Osteopathy, Research and Practice. Published by the Author, Kirksville, Mo., 1910, p. 54.

of the shoulder and place my fingers on the affected rib and push up or down as the case may require." It is not to be inferred that these quotations represent isolated references, or the first osteopathic mention of such conditions. The earliest osteopathic textbooks, and even before them *The Journal of Osteopathy* told about rib lesions as something recognized and treated as a matter of course in the everyday work of the osteopathic physician.

Perhaps Dr. Goldthwait is unaware of the existence of such texts, or should we say that he is unwilling to announce publicly that any good can come out of osteopathy? It is the same old story—osteopathy discovers a scientific truth, allopathy *re*-discovers it many years later. We repeat what we said in an editorial published in these columns in May, 1936, "Although our principles and achievements are not unknown to them, they blindly assume to disregard all the rules of the game relating to the courtesy due the one who first calls public attention to a scientific fact."

R. E. D.

WHEN A GAIN IS A REAL GAIN

It may be a weakness of human nature, but at least it seems natural to wish to be on the winning side. Therefore, it should be easier this year than last for members to support the efforts of the Committee on Special Membership Effort in striving to set a new high mark for the end of the fiscal year.

In these columns one year ago we showed that the membership DIRECTORY had a gain in numbers over the previous year, but that the numerical growth of the profession was greater than that of the Association, and the per cent of the profession in the Association was lower than a year before.

This year we must report gains in at least three directions:

There are more members than ever before.

There is a higher membership percentage than last year, and higher than ever before, with the exception of 1938.

Figured on the basis of what the membership would have been if there had been no resignations and none dropped during the past year the turnover is less than 10 per cent. This still is too high, but last year it was more than 11 per cent.

The first DIRECTORY following the increase in dues showed a loss as compared with the beginning of that fiscal year on June 1. The next DIRECTORY, that for 1940, showed a gain of 62 over the previous June 1. The new 1941 DIRECTORY shows a gain of 168.

As to the number of members dropped for nonpayment of dues, just before the DIRECTORY went to press, this number in 1933 represented approximately 16 per cent of the membership, and in 1934, approximately 11 per cent. For the next four years it averaged 5⅓ per cent, and then, the year of the increase in dues, it jumped to almost 13 per cent. But last year and this, it has gone down again to approximately 6⅔ per cent—this year being a shade less than last.

When we remember the fears which some held with respect to the increase in dues, and remind ourselves that only 2½ years after that raise became effective, there is a membership DIRECTORY higher by 78 than its highpoint predecessor, we have grounds for gratification.

But let us pause only for a moment to enjoy that gratification before we move on in support of Dr. Ernest S. Powell, Chairman of the Committee on Special Membership Effort, the vice chairmen he has selected in various groups of states, and the chairmen who are working with them in all the states.

Dr. Powell has selected his various vice chairmen not in relation to the geographical distribution of nonmembers, but each chairman was given a number of states selected according to the number of nonmembers each contained. These are as follows:

Hazzard A. Sweet, Erie, Pa.—States with 200 nonmembers or more;

Donald V. Hampton, Cleveland, Ohio—States with 100 to 199 nonmembers;

Irving J. Shalett, Boston, Mass.—States with 50 to 99 nonmembers;

Robert B. Thomas, Huntington, W. Va.—States with 20 to 49 nonmembers;

Roy M. Russell, Salt Lake City, Utah—States with 1 to 19 nonmembers.

These men, with the support of their state chairmen and individual workers, are driving for a new high mark June 1. The following words by Dr. Powell indicate his feeling:

"Are we to progress, or are we to retrogress? Some may answer by saying, 'Things are going on very well today and I haven't the time.' None of us would have the time were it not for organization. We would be legislated out of existence if we were all drones. The duty of every osteopathic physician practicing in the United States is to assist in developing and maintaining security for the profession which has given him or her a livelihood." This is addressed to members, who have realized the privilege of membership and are enjoying it. It is an appeal to them to induce their neighbors to share these benefits, and thus, themselves, to benefit more.

Dr. Powell is counting on individual members and urging that they do not wait for the state chairman or for his subchairman to do any spoon-feeding. In THE JOURNAL for September, on page 51, there was a description of the "Fifty Club," which he urges every member to join. It was there said:

"There are no dues in this club. To become a member all one has to do is to turn to the back of the A.O.A. DIRECTORY where the nonmembers are listed, pick out 50 names within his own state or elsewhere, and write to or contact these nonmembers personally, telling them of the advantages of membership in the A.O.A. A list of the names should be sent to Dr. Powell, 924-25 New York Building, St. Paul, Minnesota, and he would like to be advised from time to time as to the progress you are making."

IMPORTANT!

One Thing to Do About VOCATIONAL GUIDANCE *This Month*

This message is addressed especially to osteopathic societies and their vocational guidance chairmen or committees. Societies not having vocational guidance chairmen or committees are urged to appoint them immediately from among members known to be aggressively interested in the growth of the osteopathic profession.

Then, here is *one* thing that every vocational guidance chairman or committee can do *this month!*

Call the attention of each and every member of your society to this series of pages, "One Thing to Do About Vocational Guidance This Month," now appearing monthly (Starting with the Dec., 1940, issue) in *The Journal of the A.O.A.*, and especially to the Public and Professional Welfare page, in the Feb., 1941, issue of *The Forum of Osteopathy*, page 256.

Urge your members to do the things recommended in *The Journal* series and on the page in *The Forum*. This can be done either by letter or through your society's professional publication.

More osteopathic physicians are needed in nearly every community. Help swing the profession behind organized vocational guidance work!

The materials shown below on osteopathy as a career are available from the American Osteopathic Association and its Division of Public and Professional Welfare:

SEND FOR THESE → AND USE THEM

1. (From the A.O.A.). Newly revised and enlarged edition of "Osteopathy as a Profession" and reprints of "Osteopathy as a Career," published by the U. S. Department of the Interior, Office of Education. (Prices of this literature will be sent on request.)

2. (From the Division of the P. and P. W.) Especially compiled studies of osteopathy as a vocation for each state or province. These typed manuscripts are supplied for use of state, county and local boards of education and major educational institutions without charge.

3. Outlines for talks on osteopathy as a vocation by osteopathic physicians before high school, college, and other young people's groups. (No charge.)

DO IT THIS MONTH! NOW!

Watch for another "One Thing to do" in the Next Issue.

REPORT OF MID-WINTER MEETING OF EXECUTIVE COMMITTEE

The Executive Committee of the Board of Trustees of the Association held its regular mid-year meeting in Chicago on December 27, 28, and 29, 1940. All members were present—President F. A. Gordon, Immediate Past President Frank F. Jones, President-Elect Phil R. Russell, First Vice President J. Paul Price, Professional Affairs Chairman R. McFarlane Tilley, Public Affairs Chairman Walter E. Bailey, and Executive Secretary R. C. McCaughan. At the direction of the Board, Dr. C. D. Swope, Chairman of the Public Relations Committee, and Dr. Thomas R. Thorburn, Chairman of the Division of Public and Professional Welfare, were also in attendance, each presenting a report on current activities under his chairmanship. Dr. Ray G. Hulburt, Editor, Dr. C. N. Clark, Business Manager, and Miss Rose Mary Moser, Treasurer, were likewise in attendance to report, discuss, and advise concerning matters affecting their assignments.

Dr. Floyd F. Peckham, Chairman of the Bureau of Hospitals, presented his report in person and assisted in discussing and working out the problems which faced, jointly, the Association and the American College of Osteopathic Surgeons.

The Committee was in session three long days, and well into the nights, with a long agenda of items to be discussed and decided upon. The Committee surveyed the work so far accomplished by the many committees, bureaus and departments, and formulated plans for continued, and new, activities to meet the problems which face the profession.

The Committee gave serious and prolonged attention to the problems of the profession incident to the preparedness efforts of the country. It was realized that serious problems confront the osteopathic physician in practice and the students in osteopathic colleges. The colleges, as institutions, and the osteopathic hospitals are also concerned.

A Council on Defense and Preparedness was formed, composed of seven members of the profession under the temporary chairmanship of Dr. Phil R. Russell. Drs. K. Grosvenor Bailey, Ralph P. Baker, Melvin B. Hasbrouck, E. A. Ward, and James O. Watson have accepted appointments as members. The Council was set up to cooperate with the Public Relations Committee in stimulating all possible efforts toward the participation of the osteopathic profession in national defense and preparedness and, to that end, to survey all available and potential resources of the profession. A meeting of the Council is planned in the immediate future.

Concurrently with the meeting of the Executive Committee, the Executive Committee of the American College of Osteopathic Surgeons was in session, following which, Drs. Ralph P. Baker and Orel F. Martin, President and Secretary, respectively, of the Surgeons, represented that organization in presenting to the Executive Committee of the A.O.A. certain matters of mutual interest.

A motion was passed recommending that the American College of Osteopathic Surgeons continue its collection of statistical records and that the records so far collected be forwarded to the Central office for study and analysis when the necessary arrangements can be made. Standards for approved osteopathic hospitals, particularly with reference to doctors permitted to do major surgery therein, were discussed and agreed upon by the two groups. These standards will be promulgated to the hospitals in the near future. A form of certificate to be issued by the American College of Osteopathic Surgeons was approved by the Executive Committee.

Real headway was made in cooperative efforts between specialty groups and the American Osteopathic Association. The Executive Committee approved several candidates for certification as specialists by the American Osteopathic Board of Surgery, the American Osteopathic Board of Radiology, and the American Osteopathic Board of Ophthalmology and Otolaryngology. A special designation will follow the names in the 1941 Directory of the Association of all specialists so approved for certification.

Following presentation by Dr. Evangeline Percival of Los Angeles of the setup of the American College of Osteopathic Pediatricians, the Committee approved the plan of organization and operation of that College and of the American Osteopathic Board of Pediatrics.

The Society of Divisional Secretaries was granted permission, at its request, to operate at the annual convention a school of instruction for officers of divisional societies.

A rule was set up to provide that all who treat or examine patients during the sessions of the Association's general program, or its section programs, or during the programs of organizations affiliated with the A.O.A., which meet during the time of its annual convention and in the convention city, shall be required to show evidence of possession of proper professional liability insurance covering their own acts, and that those in charge of each of the above-named programs be delegated with the authority of this Association and charged with the duty of personally examining written evidences of the possession of such insurance.

The Committee directed that an additional $1,500 be allotted to the Research Fund from the General Fund of the Association during this fiscal year, in accordance with the agreement made by the Board of Trustees at the St. Louis convention.

Honorary Life Membership was granted to Drs. G. W. Graham, Marshalltown, Iowa; Jessie B. Johnson, Hemet, California; Laura E. Meader, Candia, New Hampshire; and Benjamin F. Still of Stewartsville, New Jersey —all having maintained continuous membership in the Association for twenty-five years or more and having retired from active practice.

Associate Membership (lay) was granted to Kenneth L. Senior and Floyd F. Kefford, of the staff of the Philadelphia College of Osteopathy, and to Marjorie S. Bowers, Donald G. Patterson, and Lester B. Whetten of the staff of the Chicago College of Osteopathy. Special listing in the DIRECTORY is accorded such memberships.

The Committee authorized revision by the Executive Secretary's staff of the Association's "Manual of Procedure."

D. S.

OSTEOPATHY "IN THE NEWS"

The story of William Randolph Hearst's experience recently with osteopathy was told in his syndicated column, "In the News," and reprinted with his permission on ad page 24 in this issue of THE JOURNAL.

The story is colorfully written and for that reason the writer may be excused for giving the impression that osteopathic physicians are specialists—"knights of the dislocated joint" as he calls them—and that osteopathy is a branch of medical science.—EDITOR.

Department of Public Affairs

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HOSPITALS AND CLINICS

It is quite as important that endowment be secured for hospitals and clinics as for colleges. Otherwise their building will wait upon personal or group financing. This is an obstacle the M.D. profession never has had to face. In their case a generous public has anticipated this need and erected hospitals and financed clinics and research laboratories. Today, when one enters the field of non-osteopathic medicine, he finds all necessary hospital facilities and opportunities for clinical research awaiting him.

Religious organizations — Protestant, Jewish and Catholic—have erected and operated a great many of these institutions. Municipalities have provided hospital facilities, and even the United States government has gone into the hospital business on a large scale to care for veterans and others. Orthopedic and children's hospitals have been promoted by groups of civic-minded individuals, and money has been donated generously by the public. Shrine hospitals for crippled children are evidence of the desire on the part of a fraternal organization to promote this type of charity. Service clubs have adopted civic programs, which sometimes include clinics and hospitals.

Large medical centers with extensive clinical facilities have been developed in connection with schools giving the M.D. degree, and such institutions are financed by a generous public and not by the physicians who work therein. Virtually every county in the United States has its hospital which has been built and is maintained by taxation. Most state universities have their medical schools and hospitals, the costs of which have been met largely by the taxpayers. Thus it is seen that a generous public, either by taxation or by direct giving, has provided the nonosteopathic medical profession with needed hospital and clinic facilities.

To a certain extent at the present, the facilities of such hospitals have been available to those under the care of osteopathic physicians as well as M.D.'s. Because of restrictions placed upon them by the American Medical Association, the American College of Surgeons, and related groups, an increasing number of hospitals and clinics have been closed to the graduates of our schools, and postgraduate opportunities have been denied.

That we must have hospitals and clinics is recognized by all. Shall we go down in our own pockets and build these institutions with our own money, or shall we tell our story to those who are philanthropically inclined, believing that they will do for the osteopathic school of medicine what has been done for the allopathic school? A third alternative would be for patients and taxpayers to undertake legal means to secure recognition in all institutions financed by the public.

In the past the financial structure of our colleges was planned without the benefit of endowment. At present business and administrative adjustments are being made in all of them looking toward campaigns for endowment. It is equally desirable that endowment campaigns be planned to finance clinics and hospitals. If properly planned, these activities are particularly attractive to people who have money to give.

It has been pointed out in this column that the osteopathic profession is in favorable professional contact with many people who are able to give large sums of money to charity. If these people receive proper information concerning our need for hospitals and clinics, we may properly expect some of them to be interested in helping us. They will demand that our planning be sound, that legal and business structure conform to accepted patterns, that management be in the hands of those who do not profit from the institution's activities. To meet these demands our institutions should study and adopt the accepted pattern of management of philanthropic enterprises of today.

Approximately two hundred million dollars is given to nonosteopathic medical charities in this country each year. A little more than 5 per cent of all practicing physicians of the United States are osteopathic physicians. If our profession were to receive 5 per cent of all the money given to medical charities, it would get approximately ten million dollars a year. This would go a long way toward providing adequate equipment and facilities for all our institutions—colleges, hospitals and clinics.

Already osteopathic physicians or groups of physicians have built many hospitals. Others are contemplating doing likewise. This Committee recommends that such plans be not abandoned, but that this Committee be consulted concerning plans for setting up an endowment structure. This need not interfere with private financing. In the event of success in securing endowment funds, private funds can be returned to those subscribing them. The cost of conducting an endowment campaign for a clinic or hospital is comparatively small. There is no reasonable doubt that there are today a great many people who are very enthusiastic about osteopathy, who will give our institutions financial aid if they are informed of our needs.

If there are any who doubt that money is available for medical charity, I call attention to a United Press story which in some papers has appeared under the caption, "Detroit Ready to Build Vast Medical Plant." According to this story, $100,000,000 is to be spent by philanthropic agencies and private donors for a city medical center in Detroit.

W. V. G.

ESSAY CONTEST FOR SENIOR STUDENTS ONLY

The Research Committee of the Grand Chapter of Sigma Sigma Phi is sponsoring an undergraduate essay contest in the interest of osteopathic progress. The subject upon which the essays are to be written is "The Etiology and Osteopathic Treatment of Functional Cardiac Irregularities." Because of the desire to have these essays deal with the subject in as advanced approach as is possible by students, the contest will be limited to seniors in all approved osteopathic colleges.

Three prizes will be given: first, $50.00; second, $25.00; and third, $15.00.

The Research Committee of the fraternity suggests the following outline for the essays: physiology, etiology, pathology, diagnosis, osteopathic principles, treatment (with particular stress upon the osteopathic corrective therapy), and conclusion. The papers should not exceed 2,000 words. They should be typewritten, double spaced, with wide margins. The papers must be submitted to the Deans of the respective colleges not later than April 15, 1941.

First duty: your public; Second duty: your profession; Third duty: yourself.

Help all three by attending the
National Convention
Atlantic City, June 23-27

BUREAU OF OSTEOPATHIC LEGISLATION

JAMES O. WATSON, D.O.
Chairman
Columbus, Ohio

STATE LEGAL AND LEGISLATIVE

Most of the material below consists of brief descriptions of many bills introduced into the various state legislatures, having a more or less direct interest for physicians. In the limited space at our disposal, it is impossible to give any analysis of most such bills.

Interested physicians can, in nearly all cases, secure copies of the bills from their legislators, from the clerks of the respective houses, or from those who introduced them.

Legislative chairmen in all states have been requested to keep a close eye on developments and to send copies of bills, and other information, to the Legislative Adviser in State Affairs and to the Central office of the American Osteopathic Association. Revised copies should be sent whenever amendments are made, and as soon as a bill becomes a law a copy of the final form should be sent. It is better if, in every case, a note be written on the bill or act indicating the stage it had reached on a given date. In every case where the measure has been enacted, the date of approval should be given. Many legislative chairmen are keeping in close touch with the national officers in this connection.

Unless otherwise stated, the description of a bill means simply that it has been introduced. If we have information as to its passing one or both houses, its final enactment or its defeat, the fact is mentioned.

Kansas

H.1—Introduced by Dr. D. B. Fordyce, to amend the Osteopathic Practice Act. It provides for a license as an osteopathic physician and surgeon, "which shall entitle the grantee . . . to practice osteopathy in all of its branches, as taught and practiced in colleges of osteopathy of good repute, including the right to practice operative surgery and obstetrics, and administer antiseptics, anesthetics, narcotics and biologics. . . ." The professional education required is four years of thirty-six weeks in each separate year, following graduation from high school, academy, state normal school, college or university or a certificate of examination for admission to the freshman class of a reputable college approved by the board; after July 1, 1941, one year, and after July 1, 1944, two years of preprofessional college education. To practice major surgery there is also required two years' service as an intern or two years' actual experience as an assisting or operating surgeon.

H. 8—a naturopathic practice bill.

Massachusetts

H. 114—to require physicians to reregister annually at a fee of $2.

H. 116—for a committee of legislators and physicians to investigate the desirability of special training for surgeons.

H. 122—to provide literature on venereal diseases and the importance of premarital examinations to those filing notice of intention to marry.

H. 130—to require the prescription of a physician, dentist or veterinarian for the retail sale or distribution of aminopyrine, cinchophen, barbituric acid or their derivatives.

H. 134—to make the food and drug laws more nearly uniform with the Federal act.

Missouri

Dr. Charles L. Judd, Pollock, was elected coroner of Sullivan County, November 5.

New York

Dr. William O. Kingsbury has been appointed by the Board of Regents of the New York State Department of Education as the osteopathic member of the Committee on Medical Grievances for a five-year term beginning January 1, 1941.

CORRECTION

THE JOURNAL for January, 1941, reported that the Supreme Court of New York had overruled the board of Regents, which refused to issue an "extension certificate" under the amended law, to a sightless osteopathic physician. It should have been explained that New York's judicial system is different from that of most states, and that the mere fact that action has been taken in the supreme court does not mean that the court of last resort has acted.

Ohio

Dr. J. W. Clark, Delphos, has been appointed for the third successive term as city health commissioner.

Washington

Dr. L. H. Walker, Ellensburg, who was city health officer for many years has been appointed county health officer.

RE-REGISTRATION OF OSTEOPATHIC LICENSES

March 1—Colorado, $2.00 for those in the state, $10.00 for others. Address Harvey W. Snyder, M.D., 1612 Tremont Pl., Denver.

FEDERAL INCOME AND DEFENSE TAX RETURNS

The period for the filing of income and defense tax returns covering the calendar year 1939 began January 1, 1940, and ends at midnight of March 15, 1941. Members of a profession whose gross income renders them liable to report, use Form 1040, regardless of the amount of net income. Informational returns, showing the names of all employees to whom payments of $800 or over a year, if single, or $2,000 or more a year, if married, are made, should be filed on or before February 15, 1941 (Forms 1096 and 1099).

An osteopathic physician or other professional persons must include in gross income all fees, salaries, and compensation of any kind for professional services. He may deduct all necessary expenses incurred in the pursuit of his profession. These include the cost of supplies used in his practice, office rent, cost of light, water, fuel, and telephone in his office, the hire of office assistants, and expenses paid in the operation and repair of an automobile, based upon the proportion of time it is used in making professional calls or for other professional purposes. The purchase price of an automobile, whether it is used for business or pleasure, is not deductible, but depreciation based on the cost of the car and its estimated use or life is deductible.

Many osteopathic physicians use their residences both as their offices and their homes. In such instance an osteopathic physician may deduct as a business expense the rental value of the rooms occupied for office purposes if he actually pays rent, and also the cost of light and heat furnished these rooms. Also, he may deduct a portion of the wages paid domestic servants whose time is partly occupied in caring for these rooms.

Contributions to the American Osteopathic Association, whether by individuals or corporations, are deductible.

The cost of professional journals for his own use, and the cost of current magazines and newspapers kept in his waiting rooms for the benefit of his patients, are deductible. The cost of technical books is not deductible, being a capital expenditure, but a proportionate amount for each year's depreciation of the books may be deducted. Depreciation may also be taken on office furniture and equipment. Insurance premiums on office or other professional equipment and liability insurance may be deducted. A premium paid for automobile liability insurance should be apportioned and that part of the premium attributable to business may be deducted as a business expense.

Among the deductions allowable for taxes paid during 1940, are the following: State income taxes, personal property taxes, taxes on real estate (except for local improve-

ments), and taxes imposed upon employers by Sections 804 and 901 of the Federal Social Security Act (Federal Old Age and Unemployment Insurance Taxes).* Professional license fees exacted by a State or City are deductible as taxes.

Ten per cent is added to the normal income tax as finally computed for defense purposes.

*For a more detailed discussion of Federal Social Security Taxes, see A.O.A. JOURNAL, October, 1939, pages 137 and 138, and February, 1940, page 304.

PUBLIC HEALTH RADIO PROGRAMS

Educational health programs approved by the Division of Public and Professional Welfare of the American Osteopathic Association are being broadcast over the following stations:

KFKA—880 kilocycles, Greeley, Colo., Wednesdays, 4:45 p.m., Colorado Osteopathic Association.

WMFJ—1420 kilocycles, Daytona Beach, Fla., Saturdays, 10:30 a.m., Volusia County Osteopathic Association.

WCLS—1310 kilocycles, Joliet, Ill., first and third Thursdays of each month, 7:15 p.m., Illinois Osteopathic Association.

WDZ—1020 kilocycles, Tuscola, Illinois, second and fourth Wednesdays of each month, 1:30 p.m., Illinois Osteopathic Association.

WFAM—1200 kilocycles, South Bend, Ind., third Friday of each month, 11:45 a.m., St. Joseph Valley Osteopathic Association.

KIUL—1210 kilocycles, Garden City, Kans., Wednesdays, 11:30 a.m., Southwest Kansas Society of Osteopathic Physicians and Surgeons.

KGKY—1500 kilocycles, Scottsbluff, Neb., every other Thursday, 2:00 p.m., Nebraska Osteopathic Association.

WTRY—950 kilocycles, Troy, N. Y., Tuesdays, Hudson River North Osteopathic Society.

WJTN—1210 kilocycles, Jamestown, N. Y., Wednesdays, 3:45 p.m., New York State Osteopathic Society.

WHBC—1200 kilocycles, Canton, Ohio, Wednesdays, 3:15 p.m., Stark County Osteopathic Society.

WSOO—Sault Ste. Marie, Michigan, weekly, 7:30 p.m., Upper Peninsula Osteopathic Association.

KFDA—1500 kilocycles, Amarillo, Texas, Thursdays, 9:00 p.m., Amarillo Society of Osteopathic Physicians and Surgeons.

KMO—1330 kilocycles, Tacoma, Wash., Tuesdays, 3:45 p.m., Pierce County Osteopathic Society.

CALIFORNIA RADIO SYSTEM, Saturdays, California Osteopathic Association.

WTCM—Traverse City, Mich., Tuesdays, 7 p.m., Northwestern Michigan Osteopathic Association.

LETTER TO A WORKER

Dear Doctor:

Everyone up here in the Twin Cities is interested in developing winter sports, and their efforts are being rewarded satisfactorily. It reminds me of our Committee on Special Membership Effort, of which you are a member, and its endeavor to sell our profession the idea of organization. Nowadays we talk in thousands plus, and the small organizations, to exist, strive to do their utmost. The world seems to be developing on the multiplication plan. The members in the states in your division must support their state membership chairmen in their efforts to reach new members and hold the old ones for our splendid organization.

E. S. POWELL, D.O., Chairman
Committee on Special Membership Effort.

Convention News

LIKE GOLF? HORSEBACK RIDING? FLYING? COME TO THE NATIONAL CONVENTION

All work and no play makes an osteopathic physician worth only half his salt. The other half of that vital saline element you'll find in abundance at Atlantic City when you arrive for the forty-fifth National Convention. It's in the air, it's in the sea, and except for a well-administered osteopathic manipulative treatment you couldn't find a better tonic!

But salt isn't the only refresher in the Nation's playground. The four large golf courses are duffers' delights and professionals' favorites. Boating on the ocean and inland bays is one of the most popular sports. A large public sailing fleet at the Inlet enables you to sail whenever and wherever you please. As for fishing—well, the whoppers you tell the folks back home will have the added virtue of being true! Nowhere else along the eastern coast are weakfish, bluefish, kingfish, fluke and channel bass found in such abundance. (Now *you* tell one!) The splendid ocean pier and the completely equipped club house of the Anglers' Club are available to you.

If you always like to keep your feet on the ground, all well and good, but there's many an air-minded D.O. these days. If you're one of them you'll find a large fleet of passenger planes at your disposal for sightseeing trips high in the blue over Absecon Island, on which Atlantic City is situated.

Have you a good trigger-finger? Then you'll have a good chance to use it (in a harmless way, we hope) at one of the many gunning and trapshooting clubs in the vicinity.

Or maybe you'd just like to "take it easy." In that case you'll stroll up on the boardwalk, wink at a grinning "redcap," and promptly be bowed into a large, luxurious, deep-cushioned rolling chair. From then on life will be one long paradise of riding on a cloud. If you've never been on Easy Street before you'll be on it then, for Atlantic City's rolling chairs are better than heaven to a tired doctor. You can ride fourteen miles along the boardwalk if you wish, or any fraction thereof. There'll be the soft lullabye of the sea to soothe your jangled nerves, and a feast of sights to delight your eyes if you've been staring at hospital charts too long.

Yes, no matter what variety of recreation and restoration you want and need you'll find the best facilities in the world at Atlantic City when the National Convention meets next June.

J. C. BUTTON, JR., Chairman
Attendance Promotion Committee

CHANGE IN TECHNIC SECTION CHAIRMAN

Dr. L. L. Facto, 3111 Ingersoll Ave., Des Moines, will replace Dr. C. K. Edwards as Chairman of the Technic Section.

CONCERNING 1943 CONVENTION INVITATIONS

The Constitution of the American Osteopathic Association was amended at the 1939 convention to provide that "the House may take action covering not more than two succeeding conventions." Therefore, it will be possible, but not mandatory, for the House of Delegates at the 1941 convention in Atlantic City to select the convention city for 1943. Los Angeles was chosen for the 1942 convention.

Formal invitations must be received not less than sixty days before the convention and in such invitation the inviting city should give detailed description of physical facilities and local organization. This descriptive information is an essential part of the convention invitation and failure to provide it will bar consideration of the invitation by the Convention City Committee and by the House of Delegates. The Convention City Committee is composed of Dr. T. T. Spence, Chairman, Drs. Louis H. Logan, C. Robert Starks, C. N. Clark and R. C. McCaughan.

Eye, Ear, Nose and Throat Section

MÉNIÈRE'S SYNDROME*

A Plea for a More Constructive, Conservative Attitude

LLOYD A. SEYFRIED, B.Sc., D.O.
Detroit

Without question the most interesting single condition in otology is Ménière's syndrome. This much misunderstood problem, while still unsolved, is being brought under effective control because research is replacing theoretical knowledge with factual knowledge. The well-recognized triad of symptoms—vertigo, nerve deafness, and tinnitus—have been known to be of aural origin ever since Prosper Ménière[1] read his classic paper before the French Academy of Medicine on January 8, 1861. Ménière[1] accurately described the case of a young girl, who, on autopsy was found to have a normal cerebellum and cerebrum, but there was a bloody exudate in the semicircular canals, with traces in the vestibule and none in the cochlea. From these observations he concluded that the condition was aural rather than cerebral in origin. His conclusions became so widely accepted that even today many physicians are still of the opinion that Ménière's disease is due to a hemorrhage into the labyrinth, and are advising patients that the condition is incurable.

S. MacCuen Smith[2], nearly forty years ago, recognized the error in Ménière's observations when he stated that "It has been definitely shown that Ménière's symptoms do not arise from a single disease of the labyrinth." He suggested that what Ménière saw was not a hemorrhage into the labyrinth, but the results of cerebrospinal meningitis of the epidemic type. Smith[2], recommended that the designation, "disease," be discarded in favor of, "symptom-complex."

Clarence H. Smith[3] reaffirms this contention today when he brands the term Ménière's disease a misnomer because there is no distinct, separate, pathological entity which gives rise to paroxysmal vertigo, tinnitus, and deafness.

In view of the confusion which has existed, it is not surprising that misdiagnosis has occurred, and vertigo of clearly symptomatic origin has been labeled Ménière's disease, but there never has been any excuse for declaring such a condition incurable. Atkinson[4] states that while the cause of the symptoms is often obscure, it is certainly not a labyrinthine hemorrhage, as was originally supposed.

Vertigo is a complex and interesting problem. Equilibrium is maintained by normal function of: (1) the labyrinth, (2) the eye, (3) the kinesthetic apparatus (muscles, tendons, and arthrodial joints). Cinelli[5] gives credit to Sir William Gowers for calling attention to the fact that 90 per cent of all cases of vertigo are due to aural lesions. It is Cinelli's belief that vertigo is primarily an ear problem. This means that otologists must be as competent in carrying out examination of the vestibular apparatus as they are in conducting functional examination of hearing. Understanding of the anatomy of the vestibular pathways and the effect of lesions of the aural apparatus, central nervous system, and ocular apparatus, as well as the effect of systemic pathology, must be appreciated if the etiology of vertigo is to be discovered.

Symptoms.—The symptoms of Ménière's syndrome are well known, consisting of acute spells of intense tinnitus, followed by severe vertigo and diminution of hearing, usually in one ear. The spells are accompanied by vasomotor symptoms, and by spontaneous nystagmus, often reaching the third degree and usually directed towards the deaf side. These attacks last from several hours to several days and are followed by a normal, or nearly normal, period of varying length. They may occur only once or twice a year at first, afterward becoming more frequent with variable severity. Patients may be thrown to the ground without warning with a severe attack, and even during periods of complete normality, become obsessed by the fear of subsequent attacks. Some even remain indoors and in bed for months on end because of this fear. All patients complain of unsteadiness after an attack. This symptom may persist between attacks. Deafness is usually acutely increased during the attack and the loss continues for some time following. According to Brunner[6], Ménière's syndrome consists of a triad of symptoms consisting of: (1) cochlear symptoms—tinnitus, and deafness; (2) labyrinthine symptoms—dizziness, spontaneous nystagmus, diminution of the excitability of one labyrinth; (3) general vasomotor symptoms. Brunner[6], justifies the diagnosis of Ménière's syndrome only when this triad is present.

Diagnosis.—Since we do not often have the opportunity of observing a patient during an attack, diagnosis must be based on careful history and results of cochlear and vestibular examination. The tympanic membrane usually is retracted on the side of deafness, and is otherwise normal. Obstruction of the eustachian tube on the side of deafness often occurs, and has been observed by Mollison,[7] Scott,[8] Shield,[9] and Muncie.[10] Functional hearing examination shows loss of high tones and diminution of hearing for both bone and air conduction. The hearing is variable and deafness is aggravated by each attack. Vestibular findings are inconclusive, but nearly always show dysfunction varying from hyperexcitability to occasional complete loss of function. Vogel[11] observes one labyrinth to be more excitable than the other, independent of the method of stimulation used. This phenomenon he calls "nystagmusbereitschaft."

Etiology.—Brunner[6] classifies Ménière's syndrome into symptomatic and idiopathic. Symptomatic Ménière's syndrome includes diseases such as leukemia, arteriosclerosis of the brain, neurofibroma of the cochlear nerve, cerebellar tumor, Paget's disease of the temporal bone, tabes, syphilitic neurolabyrinthitis, and many others. Idiopathic Ménière's syndrome is due to no special etiology, and, as expressed by Dandy,[12] is "merely an explosion of the function of the inner ear." Idiopathic Ménière's syndrome has been investigated by many researchers and many factors contributing to the etiology have been uncovered.

Fürstenburg *et al.*[13] studied the metabolism of sodium and concluded that symptoms of Ménière's syndrome are due to retention of sodium ions by the body, independent of the retention of water. Mygind and Dederding[14, 15, 16] disagreed with Fürstenburg, and observed that 60 per cent of their patients were overweight from extra-cellular edema. They were able to demonstrate that restriction of fluids and diuresis definitely would relieve the symptoms, which they believed were due to a "hydrops labyrinthi." They also record that a "water-logged" (Wittmaack[17]) eustachian tube frequently occurs, especially during the acute periods. Wright[18] studied seventy-three cases critically, and concluded that the labyrinthine disease results from a focus of infection, usually in the nose, throat, or mouth, and suggested that the name "focal labyrinthitis" be given the condition. Muncie[10] believes the condition to be due to an edematous eustachian tube plus local toxemia. Adam[19] has noted that ascorbutic acid was absent in the urine in three cases of Ménière's syndrome and suggests avitaminosis C as an etiological consideration.

While of course no distinct etiological factor can be stated with certainty to cause Ménière's syndrome, these observations are of useful clinical value in therapy and as they become established, the group of idiopathic Ménière's cases becomes smaller and smaller.

Pathology.—Patients do not die from idiopathic Ménière's syndrome itself; consequently, pathological material for ex-

*Delivered before the E. E. N. T. Section at the Forty-Fourth Annual Convention of the American Osteopathic Association, June 24, 1940.

amination is not easily available. Probably the most important pathological findings are those observed by Hallpike and Cairns.[20] They examined the temporal bones of two cases of Ménière's syndrome who died following operation for division of the eighth nerve. In both cases they were able to demonstrate a gross dilatation of the endolymphatic system, particularly of the scala media, with displacement of Reissner's membrane and degenerative changes in Corti's organ. It is believed from these findings that the onset of Ménière's syndrome is due to rapidly initiated attacks of asphyxia of the labyrinthine end organs, brought about by the extremely rapid increase of fluid pressure in the endolymphatic system, with relatively small change in the volume of fluid itself. This is probably the first time that the pathological changes in the temporal bones have been studied and described adequately.

Knapp,[21] Cheatle,[22] and Tille[23] compare Ménière's syndrome to glaucoma of the eye, and suggest that the condition may be caused by increased pressure in the labyrinth, either by increased production, or impaired drainage, of the perilymph. Portmann[24] believes that the symptoms are due to an increase in the endolymphatic pressure, produced through the saccus endolymphaticus.

Dandy[12] believes that the lesion causing Ménière's syndrome is located in the sensory root of the vestibular nerve. This conclusion is, of course, entirely theoretical. Crowe[25] in reviewing Dandy's cases, suggested that the lesion is either of the eighth nerve, where the two branches pass through a common sheath, or in the endolymph, and that the lesion is both irritative and degenerative in nature.

It seems reasonable to conclude from these observations that increased intralabyrinthine pressure does occur, especially during the acute attacks of Ménière's syndrome. Whether the increased pressure is due to a vasomotor imbalance, or by a labyrinthitis secondary to focal infection, or a retention of sodium, or a disturbance in water balance, or an obstruction of the eustachian tube, can be determined only by careful examination and consideration of the individual case. The increased pressure, however, does not seem to be an organic cause in itself.

Treatment.—The treatment of symptomatic Ménière's syndrome is entirely dependent upon the treatment of the condition, or disease, causing it.

The treatment of idiopathic Ménière's syndrome consists of radical and conservative measures.

The radical treatment means surgical destruction of the affected inner ear or auditory nerve. The modern surgical treatment for Ménière's syndrome comprehends a number of methods, of which the intracranial section of the vestibular fibers of the eighth nerve as recommended by Dandy[12] is perhaps the most popular. The injection of alcohol through a surgical fistula in the lateral semicircular canal according to the method of Mollison,[7] or the injection of alcohol through the oval window as followed by Peacock[26, 27] are also advised. Peacock[27] has recently attempted intralabyrinthine decompression by puncture through the oval window. His results, however, have been transitory. Portmann[24] attempts decompression of the endolymph by opening and draining the saccus endolymphaticus. This method recently has been reported by Parkinson[28] with satisfactory results. Radical destruction of the labyrinth by subtemporal operation is recommended by Putnam.[29] Surgical methods, since they are destructive, usually abolish whatever residual hearing may remain in the affected ear, and are not completely free from mortality. In spite of Dandy's[12] report of no fatality among 264 operations, death does occur occasionally, as proved by the two cases examined by Hallpike and Cairns[20] and others reported in the literature. This, in a condition which does not of itself cause death, is significant. Usually it is found advisable to save hearing wherever possible and thus it does not seem that destructive treatment can be advised, except possibly as a last resort, after all conservative measures have failed.

The conservative treatment of Ménière's syndrome has shown brilliant results based on the discovery and correction of known causes. Dietary measures based on the research of Fürstenburg, *et al.*[31] consist of a restriction of the intake of fluids and sodium and prevention of the storage of sodium in the body by the administration of the acid-producing salt, ammonium chloride.

One hundred and twenty-five cases were treated with splendid results. Brown[30] confirms Fürstenburg's findings and reports excellent results in treatment of twelve patients.

Mygind and Dederding[14, 15, 16] have treated 157 patients with dietary measures consisting of restricted intake of fluids (700 cc. daily) a diet low in content of salt to promote diuresis, and a reduction diet for patients who are overweight with exercise, massage, and light therapy to stimulate vasomotor tone. Forty-three per cent definitely were cured of dizziness and 18½ per cent showed definite improvement of hearing.

Wright[13] reported twenty-three cases, in which he eradicated focal infection. Dizziness was cured in all cases and 43½ per cent showed definite improvement in hearing.

Muncie[32] reported twenty-four cases treated by reconstruction of the eustachian tubes and eradication of focal infection. All cases were relieved of vertigo following reconstruction and 97 per cent were relieved permanently with improved hearing. Focal infection was found in the teeth in sixteen cases, in the tonsils in ten cases, in the sinuses in twelve cases, in the colon in twenty-one cases, and in the gall-bladder in eight cases. Muncie believes the primary cause to be a "water-logged" eustachian tube, which, aggravated by toxemia, produces a labyrinthine edema.

Eustachian tube obstruction occurs far more frequently than is generally recognized. Sidney Scott[3] believes that unilateral obstruction, with inward pressure of the stapes on the labyrinth, is the commonest cause of Ménière's syndrome, and reports a series of cases permanently relieved by restoration of patency of the eustachian tube. Muller[33] also reports unilateral tube obstruction in many Ménière's cases seen by him. Krassnig[34] reported thirty out of thirty-two patients of Ménière's syndrome suffering from tubal obstruction. He believes that an inflammatory condition of the tensor tympani and stapedius muscle prevents the regulation of the perilymph pressure. Tilley is reported by Smith[3] to have cited a number of typical Ménière's syndrome cases relieved by removal of unilateral tubal obstruction. Atkinson[4] advises that the first step in treatment is to insure the patency of the eustachian tubes by thorough and repeated catheterization.

Adam[35] reports six cases of Ménière's syndrome in which the patients suffered from avitaminosis C. Three of the cases showed no ascorbutic acid in the urine. He does not suggest that avitaminosis will account for all cases, but pleads that before neurosurgeons divide nerves or remove ganglia, it might be wise to investigate the dietary and biochemical needs of the patient.

Since Ménière's syndrome can not be attributed to any one cause, careful search must be made for the etiological factors responsible and, in so far as possible, these factors should be removed. Unquestionably osteopathic cervical lesions contribute to the condition, and should be corrected. We have noted the frequency of occipito-atlantal lesions and spasticity of the cervical muscles. These findings are noted in cases where no demonstrable focus of infection exists. Cervical osteopathic lesions without doubt maintain vasomotor imbalance in the inner ear and, along with other etiological factors, should be removed.

It is my opinion that osteopathic otologists have much to contribute, especially by conservative measures, in the control of this most interesting syndrome.

SUMMARY

1. Ménière's syndrome can no longer be considered an incurable disease.

2. Vertigo is primarily an aural problem. 90 per cent of cases of vertigo are due to aural lesions.

3. Diagnosis of Ménière's syndrome is justified only when cochlear, labyrinthine, and general vasomotor symptoms are present.

4. Research has shown that the pathological condition in Ménière's syndrome is an increase in endolymphatic pressure.

causing rapidly initiated attacks of asphyxia of the labyrinthine end organs.

5. Focal infection, eustachian tube obstruction, metabolic disturbances in the storage of sodium, and the retention of water by the tissues, have been shown clinically to be etiological factors of practical therapeutic significance.

6. Surgical treatment is primarily destructive, impairing residual hearing and exposing the patient to a surgical hazard which may involve life.

7. The conservative treatment of idiopathic Ménière's syndrome has shown excellent results based on the discovery and correction of known etiological causes.

2402-08 David Stott Bldg.

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Professional progress will be reported at the 1941 National Convention in Atlantic City. Come along and keep posted.

Current Osteopathic Literature

Abstracted by R. E. Duffell, D.O.

THE COLLEGE JOURNAL KANSAS CITY COLLEGE OF OSTEOPATHY AND SURGERY, KANSAS CITY, MO.

24:193-216 (September), 1940

*Infantile Paralysis. G. N. Gillum, D.O., Kansas City, Mo.—p. 195.

Rheumatic Fever. Annie G. Hedges, D.O., Kansas City, Mo.—p. 199.

The Vitamins and Their Place in Clinical Practice. R. Raymond Wallace, Wichita, Kans.—p. 202.

Case Report: Acute Appendicitis. G. E. M. Risberg, D.O., Wichita, Kans.—p. 208.

Compound Presentations and Prolapses of Fetal Parts or Cord. Margaret Jones, D.O., Kansas City, Mo.—p. 213.

***Infantile Paralysis.**—Gillum describes the cause of the disease as a filterable virus of unknown morphology, saying that it is probably transmitted by droplet infection. As contributing causes he mentions deficiency of vitamins B, C, and possibly E in the diet, and the presence of spinal lesions, especially in the upper thoracic and cervical regions, resulting in inadequate blood supply to the brain and other parts of the body. Avoidance of contact with known cases of the disease is mentioned as the primary means of prevention, and the author lists, likewise, the avoidance of excessive work or exposure, such as may be brought about by chilling the body. The use of zinc sulphate in the nose and serum are said to be ineffective in preventing the disease.

In describing the pathology of the disease, the writer says:

"The brunt of the attack . . . falls upon the anterior horn cells located in the anterior gray matter of the spinal cord and oftentimes those motor cells which give origin to the motor cranial nerves. There is hyperemia, dilatation of blood vessels and sometimes small hemorrhages. There is round-cell infiltration about the blood vessels. The ganglion cells are swollen and show some degeneration. Ultimately the motor cells, when badly damaged, atrophy and disappear with their axons and dendrites. The muscles waste away, depending upon the number of motor nerve cells destroyed."

The writer has limited his discussion largely to the usual, spinal form, so called because the symptoms are referable to the spine and are characterized by extreme stiffness of the neck, and spine, and pain and tenderness in the muscles, particularly of the arms and legs. He takes up the prodromal symptoms of infantile paralysis; the characteristic flaccidity of the paralysis; the sensory disturbances and vasomotor changes, and fever. The abortive form of the disease is mentioned as of principal importance as a source of infection and transmission to others. Brief mention is made of the respiratory forms and the bulbar form, very often fatal. The laboratory findings made during the course of the disease are given as some increase in the white blood cells and characteristic spinal fluid changes. "At first the polymorphonuclear forms predominate, which change in a number of hours to the predominance of lymphocytes. There is also an increase in the amount of the globulin, and the spinal fluid is under increased pressure. The abortive form usually shows spinal fluid changes."

The presence of an epidemic of infantile paralysis is said to assist the physician in diagnosing the disease in the prodromal stage. Conditions which simulate infantile paralysis are given as cerebrospinal meningitis, tuberculous meningitis, encephalitis, family periodic paralysis, multiple neuritis, acute myelitis, syphilitic endarteritis, cerebral palsy, and progressive muscular dystrophy. Tests are given to help the physician rule out any of these conditions in diagnosing poliomyelitis.

Treatment is discussed for the acute and chronic phases of the disease. It is suggested that the child be kept at rest during the acute phase, if necessary by

the use of sedatives and warm baths. Lumbar puncture is useful not only for diagnosis but for treatment to relieve the increased spinal fluid pressure. It is not recommended to use either serum or injection of blood at intervals. Use of certain apparatus is recommended where there is respiratory embarrassment. The writer says:

"From an osteopathic viewpoint we feel that, clinically, manipulation of the spine is indicated. It is reasonable to assume that contracted muscles, and rigidity of the spine will further embarrass the arterial supply of the cord and the venous drainage. It is to be admitted, however, that in some cases the spine is so tender that one is at a disadvantage in giving manipulations. In those cases, warm baths and infra-red light to the spine will prove of value."

The article is concluded by a quotation from Wechsler as to aftercare in infantile paralysis:

"Do not start treatment too soon. Rest the parts as much as possible. Keep up judicious exercise and moderate electrical treatment. Continue treatment for at least two years. As far as possible, prevent deformities. Defer orthopedic operations until two years after the acute onset."

24:217-240 (October), 1940

Toxemias of Pregnancy. Mr. C. W. Peeples, Class of January, 1941, Kansas City, Mo.—p. 219.

Epidemic Encephalitis. G. N. Gillum, D.O., Kansas City, Mo.—p. 226.

*A Study of Pyloric Stenosis in the Young Infant. Margaret Jones, D.O., Kansas City, Mo. Discussion on Treatment and Case Report by George J. Conley, D.O., Kansas City, Mo.—p. 229.

A Classification of Osteopathic Physicians. Margaret Jones, D.O., Kansas City, Mo.—p. 235.

Placenta Previa. Thomas Notestine, D.O., Harper, Kans.—p. 237.

Some Symptoms of Endocrinopathies. Annie G. Hedges, D.O., Kansas City, Mo.—p. 239.

***A Study of Pyloric Stenosis in the Young Infant.**—Hypertrophic pyloric stenosis, or actual thickening of the muscular walls of the pylorus, with resultant diminution of the lumen, according to one authority, occurs frequently enough so that the practitioner should have a clear understanding of the clinical picture and the proper treatment. According to the writer it occurs about seven times more often in the male than in female infants, and frequently in the first child of a family. The disease was suggested as an entity in digestive disorders of infancy in 1777, demonstrated eleven years later by autopsy, projectile vomiting observed in 1842, palpable pyloric tumor described in 1896, and the operation to enlarge the pyloric lumen performed in 1912.

Of particular importance is this statement of the writer:

"Osteopathic practitioners have ventured the opinion that spinal lesions of the fourth and fifth thoracic vertebrae can explain the development of pyloric stenosis. Birth injuries produce these lesions which in turn produce functional and anatomical changes during the two or three weeks' time which is so very characteristic of this condition. All obstetricians know that many spontaneously delivered babies are injured. Added to this the fact that faulty technic of hyperextending the spine can easily produce upper thoracic lesions, the possibility becomes a probability. . . .

"Conclusive evidence of well-developed pyloric stenosis in the unborn babe can be attributed logically to the fact that osteopathic lesions can be sustained in utero." As an example, the writer gives the following case report: The baby was carried exceedingly low in the mother's pelvis for several weeks before birth. The attending physician described an asynclitic head presentation—reason enough for production of the lesions which were demonstrated later at the fifth thoracic and occipitoatlantal articulations. However, due to the great lapse of time, tissue changes in the pylorus had already taken place, and the fibrotic muscle layer would yield to nothing but the scalpel.

"Medical authorities all seem agreed that this condition does not result from food faults. So the osteopathic lesion etiology theory is worthy of continued investigation . . . "

Vomiting soon after feeding, of large amounts of food showing retention of more than one meal, is discussed as a manifestation of pyloric stenosis. Stomach peristalsis of a particular type is mentioned as a symptom, along with constipation, progressive loss of weight, and palpable pyloric tumor.

Dr. George J. Conley gives a case report in which he says that "in practically every instance the initial treatment of congenital pyloric stenosis should be palliative until such time as complete relief is secured or until it is very evident that there is no prospect for anything even remotely resembling relief." He says further that it is imperative to carefully examine the spine to determine if osteopathic lesions in the region from the third to the seventh thoracic may predispose to spasm of the pylorus. This is particularly true of the fifth thoracic. He adds:

"If no lesions in these regions can be found, then one is justified in applying palliative treatment empirically. This consists in concussion of the spinous process of the fifth thoracic with a plexímeter, the skin being protected with a small oblong or round pad. . . . The same effect may be obtained by direct pressure with the thumbs on each side of the spinous process, the pressure being as strong as the little one can endure. In addition to this the cervical musculature should be relaxed in order to [relieve irritation of] the vagus should any interference in that region exist."

An operation for pyloric stenosis on a six weeks' old baby, from which an uneventful recovery was made, is described in the appended case report.

24:241-264 (November), 1940

"Gait." Mr. Vance Kelsey, Junior Class, K. C., Kansas City, Mo.—p. 242.

Bad Posture and Disease. Walter Guthridge, D.O., Spokane, Wash.—p. 246.

The Ophthalmoscope in Diagnosis. Mr. H. F. Matz, Junior Class, K. C., Kansas City, Mo.—p. 249.

The Physiology and Practical Importance of Basal Metabolic Rate Determinations. Mr. Norman Schroeder, Junior Class, Kansas City, Mo.—p. 252.

*Nocturnal Enuresis. Annie G. Hedges, D.O., Kansas City, Mo.—p. 257.

The Contagious Diseases of Childhood. Donley Gates, D.O., Brinktown, Mo.—p. 259.

***Nocturnal Enuresis.**—The following possible causes of enuresis are mentioned: Distention of the bladder from fluids; concentrated or highly acid urine; phimosis; adherent clitoris; rectal irritation from intestinal parasites, fissure, or polyp; irritation from focus of infection in the genitourinary tract; psychic influences; infection and enlargement of the tonsils and adenoids; defective innervation of the vesical sphincter; vascular and nervous factors; certain allergic conditions, such as those caused by horsehair products and pork. The writer quotes Chapin and Royster† to the effect that both the sphincteric and detrusor muscles of the bladder are innervated by the segments in the spinal cord corresponding to the third, fourth, and fifth sacral nerves, and that active incontinence is due either to a lack of brain control or "overaction of the cord." Passive incontinence is said by them to be caused by weakness or paralysis of the sphincter.

The writer notes the fact that outstanding authorities on this condition point to spinal disturbances as a frequent factor in its etiology, and says that distinctive osteopathic methods may well be used first, before other methods are resorted to. Osteopathic manipulative treatment of enuresis as practiced by Dr. Still is as follows:

"The ischia should be carefully spread apart. Do

† Chapin, H. D., and Royster, Lawrence: Pediatrics. William Wood and Co., Baltimore, 1933.

not use force that is liable to injure the spine. Gently adjust the innominates to the sacrum, and correct all sections of the lumbar and thoracic spine. With gentle pressure in front and above the pubis, draw the bladder up a little, while in the knee-chest position."

The author suggests a number of ways, including psychologic methods, which can be used to control nocturnal enuresis, once organic disease is ruled out and all causes of local irritation and all foci of infection are removed. Certain salty foods are recommended to be added to the diet, especially before the child goes to sleep.

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KIRKSVILLE, MO.

47: No. 11 (November), 1940

Importance of Oral Infections in the Treatment of General Systemic Diseases. Seth Thomas, D.D.S., Lecturer in Oral Hygiene, K.C.O.S.—p. 19.

Strictly Manipulative: An Effective Manipulative Approach to an Inflammatory Condition. (Beginning Peritonsillar abscess.). J. S. Denslow, D.O., Kirksville, Mo.—p. 21.

Case Report: A Case in Which Structural X-Ray Studies Were Used to Advantage. James J. Choate, D.O., Houston, Tex.—p. 25.

47: No. 12 (December), 1940

* Diagnosis of Peptic Ulcer. M. D. Warner, D.O., Kirksville, Mo.—p. 17.

Osteopathic Medicine. William G. Peretz, D.O., Flemington, N. J.—p. 20.

Strictly Manipulative: Manipulative Treatment in a Case of Anal Fissure. J. S. Denslow, D.O., Kirksville, Mo.—p. 22.

***Diagnosis of Peptic Ulcer.**—The writer says that astute clinical observation of signs and symptoms (using laboratory and x-ray findings for confirmation rather than for definite diagnosis) will enable the physician to establish a working diagnosis of peptic ulcer. The most characteristic of these symptoms he says are periodicity and punctuality.

"Usually the patient presents a history [of abdominal pain] of some years' duration, with periodic attacks and intermissions, alternating every few weeks or months. The symptoms are seldom continuous and rarely does the patient consult the physician during the first attack. His favorite 'radio alkalie' probably carries him through his initial 'dyspepsia,' but a more severe recurrence prompts him to seek professional aid.

"Pain is periodic not only as measured in weeks or months but in point of daily recurrence. It is not only periodic but punctual, and related to meals. . . . Ulcer pain is cyclic, varying in rhythm according to the site of the ulcer. In gastric ulcer, the pain begins from thirty minutes to two hours after a meal and gradually disappears before the next meal. In duodenal ulcer, the pain is relieved by food and recurs after an interval of comfort lasting two to four hours. The cycle in gastric ulcer is food, comfort, pain, comfort, food; in duodenal it is food, comfort, pain, food.

"The pain is usually epigastric or sub-xiphoid in location and dull or burning in type, but it may be agonizing. It is usually referred to the posterior angles of the fifth to seventh ribs. In some patients pain occurs only after certain meals, as the early morning (1:00 to 2:00 a.m.) pain of duodenal ulcer; or after coarse or irritating foods; in others the pain may simulate biliary colic especially in gastroptosis when the duodenum is fixed in a high position. Conversely biliary disease, kidney and ureteral disease or even appendicitis often simulate gastric ulcer in their painful manifestations."

In speaking of gastric analysis as a means to diagnosing ulcer or malignancy, the writer says that acidity may be accepted as valuable, being indicative but not conclusive evidence of benign or malignant gastric pathology. Nor, he says, is anacidity of the stomach conclusive evidence of malignancy. He adds: "Why, then, bother with gastric analysis? The answer is that whenever the x-ray or fluoroscope show confusing evidence of gastric pathology; whenever the roentgenologist is undecided whether the abnormality is ulcer or cancer, then a hypoacidity invariably spells malignancy, while a normal or hyperacidity indicates ulcer."

The writer presents a "Differential Chart for Gastric Ulcer, Duodenal Ulcer, and Malignancy," in which significant signs and symptoms are listed according to frequency rather than constancy.

CLINICAL OSTEOPATHY
LOS ANGELES

36: No. 12 (December), 1940

*Histamine—A Causative Factor in Certain Abnormal Functions. Part II. T. J. Ruddy, D.O., Los Angeles, Calif.—p. 638.

Osteopathic Technic as Developed in the Department of Manipulative Technic, C.O.P.S. Part IV.—p. 643.

Gynecological Considerations of Lower Back Pain. Roger Abbott Peters, D.O., Oakland, Calif.—p. 651.

Minutiae in Diagnosis and Treatment. Charles C. Teall, D.O. (Journal of the A.O.A., April, 1911).

***Histamine—A Causative Factor in Certain Abnormal Functions.**—The author reviews causative factors in the formation of toxic amines, including histamine, mentioned in Part I. (See JOURNAL A.O.A., January, 1941, page 245.) In Part II he goes on to suggest how histaminosis and its symptom complex may be prevented, "assuming that fresh food has been properly prepared to supply the body with adequate vitamins, minerals and the other biologic values, and that the foodstuff has been properly combined, balanced, and (1) thoroughly mixed with (2) a normal amount of ptyalin, and that the ptyalin has had (3) ample time to act." He lists means of promoting gastric wall tonicity, and untrammeled vagus nerve impulses to the stomach walls, saying in part:

"The osteopathic concept is strikingly evident in the performance of the autonomic nervous system in salivary and gastrointestinal digestion, and it behooves us to determine the integrity of both divisions of this mechanism during the management of the prophylactic or corrective aspects of histaminosis. Nothing else is quite so satisfactory as manipulative technic. . . . "

The author discusses the role of sympathin and acetylcholine in controlling the action of the nervous system when the preganglionic fibers of the sympathic nervous system or the vagi are severed. In discussing the validity of the chemical mediator theory, he says: "Certainly it is true that the sympathetic nerve mechanism is hooked up so closely that when a stimulant is applied at one point, the effect may be evidenced throughout all the cells reached by that system. Thus a few severed nerves do not appear to affect the purpose and scope of the system. The chemical mediator theory is wholly *inferred*, even though apparently there is ample foundation for its logic."

In his concluding paragraphs the author mentions substances for use in the diet, for augmenting or substituting protein digestive enzymes, for insuring better starch digestion and for splitting of proteins to shorter chains with a minimum amount of histamine.

37: No. 1 (January), 1941

Premalignant Conditions of the Female Genitalia. Harriet L. Connor, D.O., Los Angeles, Calif.—p. 5.

Osteopathic Technic as Developed in the Department of Manipulative Technic. C.O.P.S. Part V.—p. 14.

Brucellosis. Part I. Lloyd W. Davis, D.O., McAllen, Tex.—p. 22.

Nervous and Mental Disorders in General Practice. H. P. Hoyle, D.O., F.A.C.N., Macon, Mo.—p. 27.

*Osteopathy: A Profession—Not a Business. G. H. Meyers, D.O., F.I.S.O., Tulsa, Okla.—p. 32.

Spinal Arthritis. Carl P. McConnell.

The Face That Launched a Thousand Lawsuits. Raymond Nettleship.—p. 39.

Editorial: Pitting Manipulation Against Tremendous Odds.

***Osteopathy: A Profession—Not a Business.**—Meyers says: "It seems strange that, in a profession numbering only 5 per cent of the physicians in the United States, the impression should prevail that the members of this small profession are in competition with each other. Until the members of our profession have as much intelligence and loyalty as the members of labor unions, know enough to establish fair rates of compensation for services rendered, and work for the benefit of the whole group, we cannot hope to be evaluated by the public as a great profession. Until we ourselves forget business practices, forget competition and devote ourselves to a real service to our patients we shall deteriorate as a profession, even though we may improve as a business."

Current Medical Literature

Abstracted by R. E. Duffell, D.O.

Present Status of Knowledge Concerning Influenza

A review of the work done on influenza during the past several years at the Laboratories of the International Health division of The Rockefeller Foundation in New York is presented in the *American Journal of Public Health* for November, 1940, by Frank L. Horsfall, Jr., M.D.

According to the writer, the term, "influenza," is derived from an Italian name first used in the seventeenth century meaning literally "an influence of the stars." Many agents have been named as the cause of the disease in the past thirty years, but it was not until 1933 that a virus was discovered which satisfied essential criteria. This virus, pathogenic for ferrets, was recovered from the throat washings of patients suffering with influenza and it was demonstrated that antibodies against this virus were produced during convalescence from the disease. Horsfall says that although there can be almost no reasonable basis on which to doubt the evidence that this virus has caused many epidemics of influenza in the last seven years, there is equally good evidence that this virus has not caused all epidemics of the disease during the same period.

Despite the fact that the various clinical and epidemiological manifestations of the disease may be nearly identical in two separate epidemics, various workers have not been able to demonstrate the presence of the known virus in all the cases even in one epidemic. The writer says that "the relative frequency with which epidemics of influenza are caused by the virus or are of unknown cause has not been determined, and insufficient data are available to assist in forming an opinion." Because some epidemics are caused by a known virus and others are still of unknown cause, it seemed advisable to adopt a more precise terminology that has been used heretofore. The nomenclature suggested by The Rockefeller Foundation in collaboration with the National Institute for Medical Research, London, is as follows:

"*Clinical influenza*—An etiologically indefinite symptom-complex characterized by clinical manifestations which in recent years have been enumerated and described by numerous authors.

"*Influenza A*—A specific disease caused by infection with any strain of the virus discovered by Smith, Andrewes, and Laidlaw[1] which will be termed influenza A virus.

"The separation of influenza A from clinical influenza leaves a disease or group of diseases clinically resembling it but as yet of unknown etiology. If hitherto undescribed viruses are isolated from this group and shown to be etiologically related, other specific diseases in the group could be labeled influenza B, C, etc."

In discussing the disease, influenza A, the writer says that it cannot yet be diagnosed certainly on clinical grounds alone. "The most conclusive evidence is available when influenza A virus has been recovered from the throat washings of a given case and an increase in antibodies against the virus demonstrated in the serum of the same patient." However, evidence of this type is difficult to obtain, and even in the most thoroughly equipped laboratories with highly trained personnel only a small percentage of cases in a large epidemic can be studied with this degree of thoroughness. It takes not less than three weeks to recover and identify influenza A virus from a given throat washing. Also, given ideal conditions, it is possible to obtain evidence of an increase in specific antibodies by means of the complement-fixation test in not less than ten days to two weeks after the beginning of an epidemic.

Persons coming in contact with patients suffering with influenza A may not develop clinical symptoms, nonetheless they may become infected. In a recent investigation 30 per cent of persons freely exposed to clinical cases subsequently developed an antibody response indicative of infection by the virus. The comment is made that this group with subclinical infections are of much greater importance in spreading the disease than those persons whose illness incapacitates them and thereby markedly reduces the number they might expose.

Vaccines made of active tissue culture virus and of formaldehyde-inactivated virus obtained from infected mouse lungs have not been effective in preventing the occurrence of the disease. Recently, however, Horsfall and Lennette[2] reported that a formalinized complex vaccine containing both influenza A virus and canine distemper virus was very effective in the immunization of ferrets against antigenically different strains of the former virus. "More recently," says the writer, "it has been found in this laboratory [International Health Division of The Rockefeller Foundation, New York] that a similar formalinized complex vaccine prepared from chick embryos infected simultaneously with both influenza A virus and canine distemper virus was very effective in stimulating the production of additional neutralizing antibodies against influenza A virus after a single subcutaneous injection in man. Moreover, the increased antibody titers which resulted from the administration of this vaccine did not diminish during the first three months after vaccination."

The writer concludes by stressing again the fact that some epidemics of clinical influenza are still of unknown cause. Until the recovery of an etiological agent, or agents, from epidemics of this kind, is accomplished, our information concerning this group of diseases will remain very incomplete."

1. Smith, W., Andrewes, C. H., and Laidlaw, P. P.: Lancet 1933, 2:66-68.

2. Horsfall, F. L., Jr., and Lennette, E. H.: Science, 1940, 91:492-494.

Case of Influenzal Meningitis

Ernest L. Noone, M.D., and Patrick J. Kennedy, M.D., describe a case of influenzal meningitis in *The Journal of the American Medical Association* for December 14, 1940, in which the patient, a child aged 5 years, gave a history of injury to the occipital region of the head two days previous to the onset of the disease. The writers comment on the influence this incident may have had in opening up pathways of infection and promoting the attack.

Symptoms began with headache, nausea, and vomiting. He was taken to the hospital with a provisional diagnosis of head injury. X-ray examinations of skull and cervical vertebrae did not reveal fracture or signs of pressure. Cervical rigidity was present but intermittent in intensity. There was bilateral positive Kernig's sign. No inflammatory signs were present in the upper respiratory tract or ears. Temperature was 103 F., pulse rate 140 and respiratory rate 32.

The white cell count was 28,150 cells a cu. mm. of blood, 83 per cent neutrophils, 12 per cent lymphocytes and 5 per cent monocytes. On lumbar tap cloudy fluid was obtained under a pressure of 40 mm. of mercury. The cell count was 26,000, polymorphonuclear cells predominating.

A smear was made from the spinal fluid and the organism observed at first was thought to be the meningococcus. The patient was given 15 cc. of antimeningococcus serum intraspinally and later 20,000 units of Ferry's meningococcus antitoxin in 120 cc. of 5 per cent dextrose solution intravenously. Sulfanilamide 1.5 Gm. was also given.

The following morning, two days after the onset of the illness, Pfeiffer's bacillus was identified on the smear and treatment started with anti-influenzal serum and sulfapyridine. An initial dose of sodium sulfapyridine (1.5 Gm. in 5 per cent solution) resulted in a brief period of respiratory irregularity and muscular tremors. Two doses of influenza serum (Sharpe & Dohme), one of 90 cc. and the other of 16 cc., were administered during the day as well as 4 Gm. of sulfapyridine. Serum and sulfapyridine were given for the next four days. Both spinal fluid culture and smear became nega-

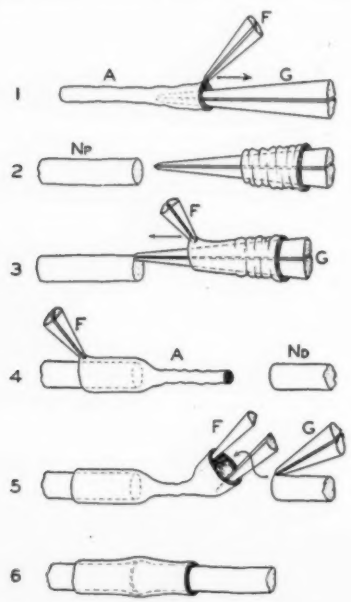
tive by the fifth day of illness. On the evening of the fifth day the child suffered an attack of paroxysmal tachycardia. The electrocardiograph registered 230 beats a minute. Pressure was made over the carotids without effect, although the writers say that the pressure was inefficiently performed and the failure of result inconclusive. During the following day the patient was given two doses of quinidine, each 1½ grains (0.1 Gm.). The second dose was given at 4 p.m. The tachycardia stopped abruptly at 5:20 p.m., the rate dropping to 125 a minute and the pulse became stronger. From that time on recovery was uneventful. Six days after the onset sulfathiazole was substituted for sulfapyridine and the former continued for six days.

Reunion of Stumps of Small Nerves by Tubulation Instead of Suture

Paul Weiss of the University of Chicago describes in *Science* for January 17, an ingenious method of joining the cut surface of a proximal nerve stump, as the source of regenerating fibers, to the cut surface of a distal stump, as the channel into which the fibers are to be routed. Ordinary suturing is never precise enough to prevent masses of fibers from escaping into the surroundings and with nerves of only a fraction of a millimeter in diameter, neat suturing becomes a mechanical impossibility. Both difficulties have been overcome by Weiss by tubulating the nerve ends with a tightly fitting cuff of fresh artery. He describes the technic as follows:

"A fragment of artery slightly narrower than the width of the nerves to be united is chosen, squeezed free of blood and immersed in Ringer's solution. All further manipulations take place in this solution. For instruments we use two pairs of hard steel (watchmaker's) forceps ground down until the ends have become very slender and sharp-pointed. The steps of the operation are illustrated in the accompanying figures. (1) With forceps F pull artery A over closed forceps G; artery becomes greatly dilated. (2) Open forceps G slightly and grasp perineurium of nerve stump NP. (3) With forceps F strip artery from G and pull half-way over NP. (4) Withdraw F. (5) Insert F into empty end of artery and open prongs slightly; introduce nerve stump ND into the opening, until the two stumps meet (some additional pressure, flanging the ends, is advisable). (6) Stretch the arterial cuff until it fits snugly.

"Enough slack should be allowed to the nerve stumps to insure apposition without stress. After sucking and blotting the excess Ringer's solution from the wound, clotting occurs rapidly. The arterial cuff, firstly, provides a firm link between the nerve ends and, secondly, prevents the formation of a neuroma and the uncontrollable escape of fibers. It is gradually transformed into perineural connective tissue and after several months can no longer be identified. Regenerating fibers traverse the wound in straight parallel courses instead of in the usual confusion following nerve suture."



Science, January 17

Inflammation of Coccygeal Gland as Cause of Low-Back Pain

In the first of a series of articles on "Progress in the Treatment of Low-Back Pain" by Russell A. Winters, M.D., in *Clinical Medicine* for January, the importance of inflammation of the coccygeal or Luschka's gland in the etiology of low-back pain is discussed. The writer quotes "Piersol's Anatomy" as locating Luschka's gland "beneath or within a small opening in the tendinous insertion of the levator ani muscle into the last coccygeal segment, covered by the origin of the external sphincter muscle."

The writer says that inflammation of Luschka's gland may produce myositis of the levator ani, pyriformis, gemellus superior, psoas, iliacus, and the external sphincter; lymphatic involvement of the anorectal, obturator, inferior sacral, and inferior mesenteric groups of nodes and channels; nerve irritation of the inferior gluteal nerve, caudal parasympathetics, and lower filaments of the lumbosacral plexus.

Predisposing causes of inflammation of Luschka's gland are: external trauma to the coccyx, hardened stools, careless instrumentation by proctologists, low-grade amebic proctitis, pectinosis, cryptitis and enlarged polyps.

Local examination may reveal (a) tenderness with a palpable space between the external and internal sphincter muscles in the posterior quadrants of the anal canal; (b) tenderness alongside the inside curvature of the coccyx, over the palpable band of the levator ani muscle and the pyriformis muscle immediately above it; (c) sinus from the coccygeal tip; (d) cyst on the coccygeal tip.

Treatment for rectal crypts, enlarged polyps, sinus and other etiological factors in Luschka's gland involvement is described briefly by the writer. The relief of low-back pain often follows such treatment.

Alvarez on "Constipation"

Stout, easy-going persons who have one or more bowel movements a day often have a relaxed anal ring through which the finger can easily be passed, whereas thin, nervous, constipated persons often have a tight anal ring which grips the examining finger powerfully. In these nervous persons it seems to me that the anal sphincters share in the increased tension which is to be found in all the muscles of the body. Constipation is decidedly a disease of nervous origin, and I suspect that it comes when, with increasing tension of all the muscles about the lower end of the pelvis, the rectum cannot empty against much resistance. In other cases the increased tonus in the rectal musculature and in the sphincters could conceivably be secondary to irritation spreading from disease in adjacent organs such as the prostate gland, uterus and adnexa.

It is possible that a contracted anal ring might produce constipation by holding the feces back above the point where they can start the chain of reflexes that bring about defecation. The normal anal ring is perhaps a centimeter wide, whereas these diseased and spasmodically contracted ones appear sometimes to be all of 2 cm. wide. When a bolus of food reaches a certain point on the back of the tongue, swallowing becomes inevitable; and similarly, when fecal matter reaches a certain point in the anal canal, defecation should become easy. Against this idea that the reflexes fail because feces cannot get down far enough into the anal canal is the fact that in many persons even the presence of a column of feces part way through this canal is not sufficient to bring the

colonic muscles to the help of those in the abdominal wall. In many cases, constipation, at least on some days, is due to a failure of the rectum to fill. This can be shown by digital examination or by washing out the rectum.—From "An Introduction to Gastro-Enterology" by Walter C. Alvarez, M.D. Paul B. Hoeber, Inc., New York, 1940.

The Use of Solution of Posterior Pituitary in Modern Obstetrics

"Solution of posterior pituitary is one of the great boons that science has conferred on women," says Joseph B. DeLee, M.D., writing in *The Journal of the American Medical Association* for October 19, 1940, "but it should not be used without a clear, generally accredited, scientific indication." DeLee outlines the scientific indications for the use of this product as follows:

In case of abortion in progress, after an appendix operation, the drug may be given for the double purpose of emptying the uterus and overcoming ileus. It may be used in all abortions actually in progress to hasten the process and save blood. "Further, when curettage is done for incomplete abortion one-half ampule, injected deep into the cervical wall, will stiffen the uterus, separate the secundines and give the curet a harder and safer surface to work on . . ."

Labor may be induced with solution of posterior pituitary but only if proper precautions are observed. It should never be used in cases of placenta praevia. DeLee found through experience that the nasal method of administration is dangerous. To induce labor he begins by giving one-half Vögtlin unit with a tuberculin syringe and watches the effect. After 20 minutes one unit is given and thereafter a like dose every 20 to 30 minutes until some effect is seen. He never uses more than one ampule (10 Vögtlin units) in one trial.

There is no justification for the use of any oxytocic [solution of posterior pituitary] in normal labor. "Expediency and convenience of the doctor or patient are not scientific indications and, outside of running the risk of being legally held responsible in the event of accidents, the medical conscience forbids such use." DeLee makes a brief trial with solution of posterior pituitary in cases of atonia uteri, pure primary uterine interia in the absence of a contracted pelvis, fibroids or mechanical organic obstruction. He says that "for atony during the second stage of labor, even greater caution is necessary, although it is here that the practitioner often uses the least. I feel sure that the forceps operation with episiotomy is safer to terminate labor, after complete dilatation, with the head on the perineum, than giving a woman a shot in the arm to blast the baby out of her person." It is permissible to give solution of posterior pituitary in cases of abruptio placentae—again with precautions—to hurry labor and increase uterine tonus, but never in placenta praevia until the baby is delivered.

During the third stage of labor it is DeLee's experience that the drug does reduce the duration of placental delivery and the loss of blood but not much, and further he has had not a few placental incarcerations "which wiped out much of the pleasure of the other two advantages." Ergonovine intravenously has been used at the Chicago Lying-In Hospital as a routine when both shoulders have appeared, but he says that it is not to be recommended for general practice. It is useful, like solution of posterior pituitary, after operative delivery and when atonia uteri is feared.

Solution of posterior pituitary is invaluable for postpartum hemorrhage though it fails occasionally. It will not stop bleeding from a laceration or from a ruptured uterus.

During the puerperium solution of posterior pituitary has yielded place in DeLee's experience to ergonovine in nearly all cases in which an oxytocic is needed. He says that it might be used to expel a piece of placenta or a clot that remains in the uterus, or in late hemorrhage of a hormone nature, together with ergonovine.

DeLee decries the use of proprietaries such as thymophysin, thytuitary, pituthymin and combinations with quinine. He says that no convincing physiologic, experimental or clinical evidence has yet been presented to prove that these drugs and the like are anything more than diluted solution of posterior pituitary or the drug in another guise.

Some of the dangers of the use of solution of posterior pituitary are given as follows:

"It can cause shock which, though seldom fatal, is often ominous and may leave permanent after-effects in the brain. Shock acts like asphyxia. Solution of posterior pituitary upsets the hormone balance in the body. Therefore its use should be avoided in cases of dysthyroidism and diabetes, ergonovine being used instead. In patients with heart disease it may be used only post partum, but here too ergot is better. In cases of threatened eclampsia it is claimed, though I have not yet seen it, to cause convulsions. [One investigator] reports postpartum eclampsia without premonitory symptoms with the use of solution of posterior pituitary . . .

"Perhaps we shall learn that solution of posterior pituitary causes other acute dyshormonisms, which may explain death in labor, the convulsions and anaphylaxis . . .

"But the greatest dangers come out of the increase in the intensity and duration of the contractions of the uterus. These may reach a violence that will rupture the organ if the resistance to the advance of the projectile (the baby) is more than the strength of the wall of the exploding chamber (the uterus). How many cases of pituitary ruptures of the uterus occur will never be known. Either they are not reported at all or the women are buried — purposely without postmortem examinations — under another diagnosis. Many women should have the words solution of posterior pituitary put in their death certificates instead of postpartum hemorrhage, embolism, massive collapse of the lungs, anesthesia or shock."

LETTER TO A WORKER

Dear Doctor:

It would be well for every osteopathic physician to ask himself one question: "What have I contributed, or what am I contributing, to make me worthy of the privileges received in the osteopathic profession?" If it were possible to turn back the pages of time and once again have the privilege of meeting Dr. Still, would we receive his blessing and have the thrill that would come from meeting such a noble character? The sincerity of purpose in his life may have a visual reflection in the conduct and accomplishments of the individual. We all owe much to osteopathy.

Many of our members would be outstanding men in any profession if they had not chosen osteopathy. They have qualities that are admirable and attractive. They are sincere and determined to do their best, wherever they may be. The privilege of associating with these men and women comes to us as a result of our place in the osteopathic profession.

We have a wonderful organization in the American Osteopathic Association. Like a plant that has a good start, it must be nurtured to bear good fruit. The membership of the Association provides its nutrition; the results of its activity are its fruits. Let us not expect too much to be done by that organization unless we first furnish the nourishment. Everyone practicing this great profession should support its organization and its officers both financially and with unstinted efforts, whereby we all may have a fuller life.

E. S. Powell, D.O., Chairman
Committee on Special Membership Effort.

The Influence of Dietary Protein on the Toxicity of Sulfanilamide

A low protein diet (7 per cent) increased the susceptibility of rats to orally administered sulfanilamide by increasing the mortality rate and the incidence of anemia as compared with similarly treated rats on a diet containing 30 per cent protein. Supplementing the low protein diet with cystine to the level contained in the 30 per cent protein diet had no effect, while a similar supplement of cystine plus methionine decreased the mortality rate but not the incidence of anemia. Examination of the blood sulfanilamide levels suggests the possibility of greater retention of the drug in animals on the low protein diet.

Histologic examination of the tissues failed to reveal specific damage attributable to low protein sulfanilamide treatment. Renal concretions and fatty metamorphosis of the liver were observed in animals on low protein diet irrespective of sulfanilamide treatment. The former appears to be preventable by methionine but not the latter.

A slight focal interstitial nephritis was present in about a third of the sulfanilamide-treated animals irrespective of diet.

Splenic pigmentation and myelosis were most pronounced in the sulfanilamide-treated animals on the high protein diet suggesting increased activity of hematopoietic organs to compensate for the blood destruction.—M. I. Smith, R. D. Lillie, and E. F. Stohlman in *Public Health Reports*, January 3, 1941. (See also article on sulfanilamide, ad p. 23).

State Boards

California

The next examinations will be held at Los Angeles, June 26, 27 and 28. For further information write to Lester R. Daniels, secretary-treasurer, Forum Building, Sacramento.

Florida

The next examinations in the basic sciences will be held at John B. Stetson University, DeLand, June 7. All applications must be received at least fifteen days prior to that date. Requests for application blanks should be sent to John F. Conn, Ph.D., secretary, John B. Stetson University, DeLand.

Illinois

The next examinations will be held at Chicago, May 14, 15 and 16.

Iowa

The Iowa Board of Examiners In the Basic Sciences will conduct a written examination at the State Capitol Building, Des Moines, on April 8 at 9:00 a.m. Address Ben H. Peterson, Ph.D., Secretary, Coe College, Cedar Rapids.

Kansas

The next examinations will be held at the Jayhawk Hotel, Topeka, February 20, 21 and 22. For further information write to Earl H. Reed, secretary, 815 Kansas Ave., Topeka.

Louisiana

The next meeting of the Board is to be held in April.

Minnesota

The next basic science examinations will be held April 1 at the University of Minnesota. Address the secretary, J. C. McKinley, M.D., University of Minnesota, Minneapolis.

West Virginia

The next examinations will be held in Huntington, February 17 and 18, at the office of Robert B. Thomas, 827 First Huntington National Bank Bldg. Applications should be filed not later than February 1. Application blanks may be secured from the secretary, Guy E. Morris, 542 Empire Bldg., Clarksburg.

Conventions and Meetings

Announcements

American Osteopathic Association, Forty-Fifth Annual Convention, Municipal Auditorium, Hotels Dennis and Traymore, Atlantic City, N. J., June 23-27. Program chairman, Walter W. Hopps, Jr., Los Angeles.

American College of Neuropsychiatrists, Atlantic City, June 20, 21.

American Osteopathic Society of Proctology, Osteopathic Hospital of Philadelphia, June 19, 20. Program chairman, Robert L. Taylor, Dayton, Ohio.

California state convention, Auditorium and Hotel Hilton, Long Beach, March 22-26. Program chairman, J. Willoughby Howe, Hollywood.

Eastern Osteopathic Association, Hotel Pennsylvania, New York City, March 29, 30. Program chairman, Chester D. Losee, Westfield, N. J.

Florida state convention, Columbus Hotel, Miami, May. Program chairman, J. M. Farrar, Miami.

Illinois state convention, Peoria, May 5-7. Program chairman, R. P. Armbruster, Pontiac.

Iowa state convention, Des Moines, May. Program chairman, Saul Klein, Des Moines.

Maryland state convention, Baltimore, April or May. Program chairman, Grace R. McMains, Baltimore.

Maritime Osteopathic Association, St. John, N.B., April 10.

Michigan state convention, Pantlind Hotel, Grand Rapids, October 28-30. Program chairman, William H. Bethune, Grand Rapids.

Middle Atlantic States Osteopathic Association, Atlantic City, June.

Minnesota state convention, St. Paul, May 2, 3. Program chairman, Ernest S. Powell, St. Paul.

Missouri state convention, Joplin.

Nebraska state convention, Columbus, September. Program chairman, Charles A. Blanchard, Lincoln.

New Mexico state convention, Hobbs, September. Program chairman, L. D. Barbour, Eunice. Raton convention, Raton, N. M., April 24-26. Program chairman, H. E. Donovan, Raton.

New York state convention, Hotel Commodore, New York City, October 10-12. Program chairman, H. Van Arsdale Hillman, New York City.

Ohio state convention, Deshler Wallick Hotel, Columbus, May 11-13. Program chairman, John W. Mulford, Cincinnati.

Oklahoma state convention, Oklahoma City, October. Program chairman, P. A. Harris, Oklahoma City.

Pennsylvania state convention, Hotel Bethlehem, Bethlehem. Program chairman, C. Haddon Soden, Philadelphia.

South Dakota state convention, Vermillion, May. Program chairman, E. W. Hewitt, Sioux Falls.

Texas state convention, Hotel Adolphus, Dallas, May 8-10. Program chairman, Marille Sparks, Dallas.

Vermont state convention, Barre, October 1, 2. Program chairman, R. H. Bartlett, Burlington.

Washington state convention, Tacoma, 1941.

West Virginia state convention, Charleston, May 18-20. Program chairman, Robert B. Thomas, Huntington.

OFFICIAL AND AFFILIATED ORGANIZATIONS

CALIFORNIA

State Association

The fortieth annual convention is to be held at the Auditorium at Long Beach, March 22 to 26. The official hotel will be the Hilton. The House of Delegates sessions will be held on March 22 and 23 and the general convention will open on March 24. The keynote of the program is "Progress Through Experience" and J. Willoughby Howe, Los Angeles, is program director. Some of the features of the program will be: "Newer Trends in Neuropsychiatry," a symposium conducted by Thomas J. Meyers, Pasadena, including a paper on "Alcoholism" by Mr. Arthur S. Guerin, Judge of the Los Angeles Municipal Court; "Recent Advances in Pediatrics," a symposium conducted by James M. Watson, Los Angeles; "Gastric Ulcer," Edward T. Abbott, Los Angeles; "Progress in Orthopedics," a symposium illustrated with motion pictures, by William W. Jenney, Dain L. Tasker, both of Los Angeles, and others; "Trends in the Laboratories—Specific and Clinical," symposium by members of the C.O.P.S. faculty; "Progress in Urology," a symposium by L. B. Faires, D. D. Stonler, both of Los Angeles, and others; "Oxygen in the Tissues," Walter V. Goodfellow, Los Angeles; "Bills Affecting the Profession in the 1941 Legislature," Glen D. Cayler, Los Angeles; "Trumpeter! What Are They Sounding Now?" F. A. Gordon, Marshalltown, Iowa, President of the A.O.A. Others to appear on the program will be K. Grosvenor Bailey, Dr. W. Ballentine Henley, President of the College of Osteopathic Physicians and Surgeons, T. J. Ruddy, W. Curtis Brigham, and Harold S. Perry, all of Los Angeles.

Other organizations to have places on the program include the O.W.N.A., California Osteopathic Association of War Veterans, fraternities and sororities.

Citrus Belt Osteopathic Society

On December 12 at San Bernardino, Dr. W. Ballentine Henley, President of C.O.P.S., Los Angeles, was the principal speaker.

East Bay Osteopathic Physicians' Luncheon Club

Meetings were held on December 24, 31, and January 7, 14, 21.

Fresno County Osteopathic Society

At Visalia, December 15, a joint meeting was held with the Kern and Tulare Counties osteopathic societies. Charles E. Atkins, Pasadena, and Glen D. Cayler, Los Angeles, were the principal speakers.

Glendale Osteopathic Society

The regular monthly meeting was held on January 8.

Hollywood Osteopathic Luncheon Club

On December 10, Lavina Ketchum, Beverly Hills, was elected president.

Kern County Osteopathic Society

(See Fresno County Osteopathic Society)

Long Beach Osteopathic Society

On January 8, the motion picture "Osteopathic Research—The Atlas Lesion," was shown and a round table discussion was conducted on "Manipulative Therapeutics and Correlated Medicine."

The February meeting is scheduled to be held on the 12th with Dr. W. Ballentine Henley, President of C.O.P.S., Los Angeles, as the guest speaker.

Los Angeles City Osteopathic Society

On December 9, Alfons I. Wray, spoke on "Fundus Oculi," L. van H. Gerdine talked on "Neurological Symptoms as They Should Be Interpreted by the General Practitioner," and W. W. W. Pritchard, on "National Infantile Paralysis Foundation"; all are of Los Angeles.

On January 13, the radio transcription record of "The Life of Andrew Taylor Still" was heard. Mr. Will Grant, Los Angeles, talked on public relations and K. Grosvenor Bailey, Los Angeles, discussed affairs of the California Osteopathic Association. An open forum followed.

Southside Osteopathic Society of Los Angeles

On January 13, Donald L. Gardner, Los Angeles, spoke on "Simple Skin Disorders" and "Prescription Writing."

West Los Angeles Osteopathic Society

On December 10, Edward S. Merrill, Los Angeles, spoke on "Why Doesn't the College of Osteopathic Physicians and Surgeons Grant the M.D. Degree?" A discussion followed.

On January 14, K. Grosvenor Bailey, Los Angeles, spoke on "The Present Status of the California Osteopathic Association."

Pasadena Osteopathic Society

The annual Christmas party was held on December 19.

On January 16, Spencer Atkinson, D.D.S., Pasadena, spoke on "Changing Dynamics of the Growing Race."

San Jose District Osteopathic Society

On December 11, at St. Claire, Charles E. Atkins, Pasadena, spoke on "Common Shoulder Problems," and Glen D. Cayler, Los Angeles, discussed "Legislative Problems of the Profession."

Sonoma County Osteopathic Society

At Petaluma, December 13, Charles E. Atkins, Pasadena, spoke on "Common Shoulder Problems," and Glen D. Cayler, Los Angeles, discussed "Legislative Problems of the Profession."

Tulare County Osteopathic Society

(See Fresno County Osteopathic Society)

COLORADO

San Luis Valley Osteopathic Association

The regular monthly meeting was held at Center, December 15.

FLORIDA

Dade County (8th District) Society of Osteopathic Physicians and Surgeons

At the January 7 meeting William Sigler, Miami, was presented with a life membership in the Dade county society.

The officers and committee chairmen were reported in THE JOURNAL for August and November. The following additional committee chairmen have been appointed: Contact, George H. W. Dunk; reception, Nancy Meek Hain; banquet, Ralph B. Ferguson; exhibits, Hugh T. Kirkpatrick; convention program, J. Marvin Farrar; hotel, Marion A. Conklin; member to work with ladies auxiliary, Martha M. Cox, all of Miami, and entertainment, Stephen B. Gibbs, Miami Beach.

East Coast (6th District) Osteopathic Society

On December 11, W. E. VanLandingham, M.D., city health officer, West Palm Beach, was the guest speaker.

St. Petersburg Osteopathic Society

On December 8, an illustrated technical program was presented. The January meeting was scheduled to be held on the 4th.

Southwest (7th District) Florida Society of Osteopathic Medical Physicians

On December 15, at Arcadia, Emery G. Pierce, Bradenton, spoke on "The Treatment of Colitis," demonstrating technic.

West Coast (5th District) Osteopathic Society

At Winter Garden, December 12, the establishment of an osteopathic hospital was discussed.

ILLINOIS

Chicago—Southside Osteopathic Physicians' Society

A general discussion was conducted on January 9.

On January 16, Wilbur J. Downing, Chicago, spoke on "Scrapbook of Osteopathic Technic."

On January 23, Malcolm Tengblad, Chicago, addressed the society on "My Impressions of Manipulative Surgery (Some Sense, Some Nonsense)."

Chicago—West Suburban Osteopathic Society

At LaGrange, January 19, Wilbur J. Downing, Chicago, discussed and demonstrated osteopathic technic.

The following officers were elected: President, Esmond C. Appleyard, LaGrange; vice president, Grace E. Clunis, Glen Ellyn; secretary-treasurer, Earl F. Frisbie, Park Ridge.

Tri-City Osteopathic Association

At Davenport, Iowa, December 13, H. C. Friend, Davenport, spoke on "Modern Trends in the Treatment of Laryngitis."

INDIANA

Northern Indiana Osteopathic Association

On December 16, a motion picture was presented on "The Treatment of Arthritis."

IOWA

Fifth District Iowa Osteopathic Association

The officers were reported in THE JOURNAL for November. The following committee chairmen have been appointed: Public health and education, publicity, legislation and professional development, R. B. Gilmour, Sioux City; convention program and arrangements, W. C. Gordon, Sioux City.

KANSAS

Arkansas Valley Society of Osteopathic Physicians and Surgeons

At Larned, December 18, F. E. Loose, Lewis, spoke on "Finance and State Affairs," and B. L. Gleason, Larned, on "State Conditions."

Eastern Kansas Osteopathic Association

At Ottawa, December 12, A. B. Crites, Kansas City, showed motion pictures.

South Central Kansas Society of Osteopathic Physicians and Surgeons

At Winfield, December 19, C. B. Myers, Madison, spoke on "Tularemia" and Paul E. Noffsinger, White Water, talked on "Sedimentation Rate of Red Blood Cells in Various Diseases."

Southwestern Kansas Society of Osteopathic Physicians and Surgeons

The officers were reported in THE JOURNAL for January. The following committee chairmen have been appointed: Membership and public health and education, M. L. Friedenberg, Garden City; professional education and clincs, Eugene Pellette, Liberal; hospitals, V. A. Leopold, Garden City; censorship and Industrial and institutional service, Roy A. Leopold, Garden City; student recruiting and legislation, Elmer H. Stultz, Garden City; publicity and statistics, O. C. Kappler, Liberal; convention program and arrangements, C. M. Noll, Scott City; professional development and displays at fairs and expositions, Robert Noll, Leoti.

MASSACHUSETTS

Connecticut Valley Osteopathic Association

The following officers were elected on December 17: President, Paul M. Brose, Holyoke; vice president, L. H. Kemper, Amherst; secretary-treasurer, Bernard J. X. St. John, Northampton.

Essex County Osteopathic Society

On December 16, the following officers were reelected: President, Paul G. Norris; vice president, J. Harold Evers; secretary, Herbert R. Hewson, all of Lynn. William E. Shub, Lynn, was elected treasurer and membership chairman. Dr. Norris was appointed chairman of the Committee on public health and education and E. Bradford Whiting, Lynn, of the publicity committee.

Middlesex South Osteopathic Society

The following officers were elected in January: President, Lee R. Catron, Cambridge; vice president, Mary A. Campbell, Cambridge; secretary-treasurer, Mildred E. Greene, Waltham; trustees, Harry E. Cash, Newton Center; Arthur W. Summers, Cambridge; Alden Q. Abbott, Waltham; and Nelson D. King, Cambridge.

Worcester District Osteopathic Society

On January 8, Myron B. Barstow, Boston, spoke on "Hypertension."

The following officers were reelected: President, Robert A. Steele; vice president, Samuel B. Jones; secretary-treasurer, Mary M. Fletcher, all of Worcester. Committee chairmen are: Membership, Amos Clarkson, Worcester; industrial and institutional service, A. B. Ames, Fitchburg; clinics, C. W. Bruninghaus, Worcester.

MICHIGAN

State Association

Officers and committee chairmen were reported in THE JOURNAL for December and January. Additional chairmen are as follows:

Department of judiciary and legislation, J. W. Norton, Farmington, chairman; bureau of legislation, Dr. Norton, assistant, H. D. Hutt, Holly; bureau of legal status, George B. Clarke, Detroit.

Department of internal affairs, H. D. Hutt, Holly, chairman; program committee, W. H. Bethune, Grand Rapids; committee on social affairs, L. Verna Simons and P. M. Wells, both of Grand Rapids; committee on ethics, W. C. Brenholtz, Flint; bureau of membership, Dr. Hutt; bureau of ways and means and development, Dr. Hutt.

Department of public affairs (in addition to what was published in the January JOURNAL: bureau of publicity, R. T. Lustig, Grand Rapids; bureau of public education, Dr. Lustig.

Department of public health clinics and hospitals, C. C. Auseon, Hillsdale, chairman; bureau of public health, Dr. Auseon; bureau of clinics and hospitals, Dr. Auseon; bureau of Women's and Children's welfare, Beth Haberer, Ann Arbor.

Department of professional affairs, E. Dean Elsea, Detroit, chairman; bureau of professional education, N. R. Kitchen, Detroit; bureau of professional development, B. E. Crase, Battle Creek; bureau of censorship, E. A. Ward, Saginaw; committee on credentials, Dr. Elsea; committee on standardization of specialists, J. D. Sheets, Detroit; committee on special membership effort, Dr. Ward; committee on professional liability insurance, Dr. Elsea; committee on distinguished service certificates, Dr. Elsea; committee on finance, Dr. Elsea.

Willis H. Yeamans, Detroit, is chairman of the student recruiting committee.

Kent County Association of Osteopathic Physicians and Surgeons

The officers were reported in THE JOURNAL for January. The following committee chairmen have been appointed: Professional education and clinics, H. O. Messmore; hospitals, H. A. MacNaughton; censorship, W. McLravy; student recruiting, D. J. Emery; public health and education and publicity, E. D. Rice; industrial and institutional service, J. V. Porcelli; legislation, M. K. Conklin, all of Grand Rapids.

On January 16, the first of a series of three meetings was held. John P. Wood, Detroit, discussed "Research." W. Dale Jamison, Saginaw, also spoke.

North Western Association of Osteopathic Physicians and Surgeons

On November 17, E. Frank Wood, Flint, was the guest speaker.

The following officers were elected: President, Martin O. Johnson, Traverse City; vice president, Thomas A. Manwell, Manistee; secretary-treasurer, E. William Stack, Traverse City; program, W. E. Lawrence, Frankfort; publicity and public welfare, R. L. Morgan, Cadillac; professional affairs, E. E. Miller, Traverse City; legal and legislative, Dr. Manwell; public health, N. F. Johnson, Scottville.

Saginaw Valley Academy of Osteopathic Medicine

On December 17, the following officers were elected: President, A. H. Fuller, Shepherd; vice president, R. F. Kenaga, Mt. Pleasant; secretary-treasurer, C. S. Chickey, Saginaw.

MINNESOTA

Minneapolis Osteopathic Society

On January 8, Will H. Flory, Minneapolis, spoke on "Acute and Chronic Renal Diseases," and Robert H. Clark, Northfield, talked on "Some of the Interesting Cases I Have Seen."

MISSOURI

Buchanan County Osteopathic Association

On December 14, at St. Joseph, H. N. Tospon and E. U. Shackelford, reported on the Missouri State association business meeting recently held at Columbia.

Jackson County Osteopathic Association

The annual Christmas party was held on December 17.

On January 21, J. S. Denslow, Kirksville, talked on "Osteopathic Technic," illustrating his lecture with x-ray studies.

North Central Missouri Osteopathic Association

At Chillicothe, December 29, A. B. Crites, Kansas City, showed motion pictures and lectured on them.

Northeast Missouri Osteopathic Association

The regular monthly meeting was held at Kirksville, December 12.

Northwest Missouri Osteopathic Association

On December 26, L. E. Fellhauer, Excelsior Springs, spoke on "The Duties of the State Board."

Osage Valley Osteopathic Association

The January meeting was scheduled to be held on the 3rd at Jefferson City.

St. Louis Osteopathic Association

On December 10, Erwin I. Schindler, Kansas City, was the principal speaker.

Southwest Missouri Association of Osteopathic Physicians and Surgeons

At Joplin, January 15, R. O. Brennan, Kansas City, spoke on "Urethral Stricture."

The next meeting is to be held at Lamar, March 19.

NEBRASKA

Central Nebraska Osteopathic Association

At Central City, December 8, A. G. Zuspan, Aurora, talked and demonstrated "The Injection Treatment for Ventral Hernia," and Bruce L. Ross, Central City, spoke on "The Neglected Cause of Low-Back Pain."

The February meeting is scheduled to be held at Clay Center.

Douglas County Osteopathic Association

The following officers were reelected in October: President, Charles T. Crow; vice president, R. O. Dunn; secretary-treasurer, Arabella S. Livingston, all of Omaha.

NEW JERSEY

Bergen-Passaic Counties Osteopathic Society

A luncheon was given on December 20 in honor of the new members of the Society.

Morris County Osteopathic Society

At the December meeting held at Boonton, W. H. Wiggins, Boonton, presented a case of cardiovascular disease, and a round table discussion followed.

NEW YORK

Central New York Osteopathic Society

On December 11, Arthur Peckham, Watertown, spoke on "Cervical Pathology and Brachial Neuritis."

Hudson River North Osteopathic Society

At Albany, February 1, Donald B. Thorburn, New York City, spoke on "Gastrointestinal Diseases."

Long Island Osteopathic Society

On January 2, at Mineola, Otterbein Dressler, Philadelphia, spoke on "The Place of Osteopathy in the History of Medicine." Many of the county's educators and premedical students were guests at this meeting.

Osteopathic Society of the City of New York

In addition to the graduate study group meetings announced in the January JOURNAL, the following also were held or are to be held:

January 8, Eugene R. Kraus, New York City, "A Resume of Arthritis From the X-Ray Point of View: With Emphasis on the Visualization of Spinal Subluxations," and Alexander Levitt, New York City, "Differentiation of the Chronic Arthrites."

February 5, discussion conducted by the Arthritic Section of the New York Osteopathic Clinic, "The Osteopathic Management of Arthritis."

February 19 or 26, Otterbein Dressler, Philadelphia, "Laboratory Findings and Their Significance."

The regular monthly meeting of the society was held on January 18. Robert Sacks, New York City, spoke on "Peripheral Vascular Disease."

Rochester District Osteopathic Society

At Rochester, December 19, James H. Reid, Rochester, spoke on "Endocrinology."

Westchester County Osteopathic Society

The January meeting was cancelled. The next meeting is scheduled to be held at White Plains, February 8.

OHIO

State Association

The annual convention is to be held May 11 to 13 at the Deshler Wallick Hotel, Columbus. A heart clinic is to be conducted by Gilbert Johnson of Cleveland in the morning of May 12 and a proctology clinic by W. W. Custis, Dayton, in the morning of May 13. Demonstrations on the application of casts will be given by H. E. Clybourne, Columbus, and others. The following papers will be presented:

"Low-Back Problems," "Two-Man Technic Used in Low-Back Problems" and "Shoulder and Upper Thoracic Technic," Martin C. Beilke, Chicago; "Diagnosis," Ralph L. Fischer, Philadelphia; "Management of Anemias," R. N. MacBain, Chicago; "Art of Resuscitation" and "Anesthesia," M. L. Axelrod, D.D.S., Detroit; "Office Gynecology," J. P. Schwartz, Des Moines; "Laboratory Procedure," Wallace M. Pearson, Kirksville, Mo.; "Problems of the Profession," R. C. McCaughan, Chicago, Executive Secretary of the A.O.A.

First (Toledo) District Osteopathic Society

On December 17, at Findlay, Edward A. Brown, Lakewood, talked on "Infantile Paralysis."

Third (Akron) District Osteopathic Society

On January 8, at Barberton, in addition to S. V. Robuck, Chicago, who was the Ohio lyceum speaker, Mr. W. S. Konold, Columbus, spoke on legislative activities.

OKLAHOMA

Central Oklahoma Osteopathic Association

Dr. L. H. Tannehill, Henryetta, is president of the association and F. W. Glass, Dustin, is secretary-treasurer.

On December 7 at Henryetta, M. R. Carner, Wewoka, was the principal speaker.

Kay County Osteopathic Association

The regular monthly meeting was held at Kaw City, December 12.

OREGON

Portland Osteopathic Association

At the regular monthly meeting held at Portland, December 13, tour of a hospital was conducted.

At Portland, January 9, R. E. Walstrom, Oswego, spoke on and demonstrated "Sacroiliac Mechanics."

PENNSYLVANIA

State Association

The officers were reported in THE JOURNAL for November. H. Walter Evans, Philadelphia, was appointed editor.

The following committee chairmen have been appointed: Membership, John H. Eimerbrink, Philadelphia; professional education, E. O. Holden, Philadelphia; hospitals, R. P. Baker, Lancaster; censorship, Lloyd Hershey, Honey Brook; student recruiting, O. O. Bashline, Grove City; public health and education, James A. Cozart, Canonsburg; industrial and institutional service, Alice Swift, Lancaster; clinics, John McA. Ulrich, Steelton; publicity, Paul B. Miller, Allentown; statistics, Roy E. Hughes, Indiana; convention program, C. Haddon Soden, Philadelphia; convention arrangements, A. G. Walmsley, Bethlehem; legislation, George B. Stineman, Harrisburg; professional development, Ralph L. Fischer, Philadelphia; displays at fairs and expositions, George T. Hayman, Doylestown.

Erie County Society of Osteopathic Physicians

The following officers were elected in December: President, Fred T. Hicks, reelected; vice president, Bertram W. Sweet; secretary, H. Jay Chivian; treasurer, John W. Robinson, reelected, all of Erie. H. Jay Chivian, Erie, was appointed chairman of the publicity committee.

Lehigh Valley Osteopathic Society

A special meeting was held on December 29 to lay the groundwork for the coming state convention.

Fourth District of the Pennsylvania Osteopathic Association

The following officers were elected on December 7: President, F. L. Bush, Wilkes-Barre; vice president, John Nicholls, Scranton; secretary; Myfanwy Evans, Scranton; treasurer, Ada I. Hobbs, Scranton. Richard Evans, Scranton, was appointed chairman of the membership committee and George Howard, Scranton, of legislation.

TEXAS

Austin Association of Osteopathic Physicians and Surgeons

The following officers were reelected on December 3: President, H. V. Broadbent; vice president, J. L. Love; secretary-treasurer, J. B. Donovan, all of Austin.

Fort Worth Association of Osteopathic Physicians and Surgeons

On December 9, Catherine Kenney, Fort Worth, spoke on "Diet and Vitamins."

WEST VIRGINIA

Charleston-Huntington Osteopathic Society

The following officers were elected on December 5: President, Chester McFarland, St. Albans; vice president, E. M. Burkhardt, Huntington; secretary-treasurer, W. S. Horn, Charleston.

Monongahela Valley Osteopathic Society

The regular monthly meeting was held at Grafton, November 14.

Ohio Valley Association of Osteopathic Physicians and Surgeons

On December 19, O. O. Bashline, Grove City, was the principal speaker.

Parkersburg District Osteopathic Society

At Middlebourne, November 12, R. H. DeWitt, Wellsburg, was the principal speaker.

The following officers were elected on December 10: President, E. H. Hahn, St. Marys; vice president, Walter S. Irvin, Middlebourne; secretary-treasurer, J. B. C. Bartram, Tanner.

WISCONSIN

Northwest District Osteopathic Association

The following are the present officers: President, J. S. Anderson, River Falls; secretary-treasurer, W. L. Madson, Rhinelander.

CANADA

Maritime Osteopathic Association

The following officers were elected on January 3: President, Paul J. Leonard, Prince Edward Island; secretary-treasurer and chairman of the membership committee, Alfred J. O'Donnell, St. John, N.B.

SPECIAL AND SPECIALTY GROUPS

American College of Osteopathic Surgeons

The officers were reported in THE JOURNAL for November. The following committee chairmen have been appointed: General chairman of arrangements for Detroit meeting in October, A. C. Johnson, Detroit; program chairman, C. L. Ballinger, Marietta; constitution and by-laws, Dr. Johnson; resolutions, W. Curtis Brigham, Los Angeles; inspection of hospitals, Edward G. Drew, Philadelphia; statistics, Ralph P. Baker, Lancaster Pa.; badges and jewelry, George C. Widney, Lexington, Nebr.

Eastern Osteopathic Association

At the twenty-first annual convention to be held at Hotel Pennsylvania, New York City, March 29 and 30, the following program is to be presented:

"Some Basic Mechanical Considerations of the Human Spine," S. L. Bailey, New York City; "A Review of Certain Common Diseases of Bone," Otterbein Dressler, Philadelphia; "The Problem of Tuberculosis and Tuberculin Testing," and "Infantile Paralysis," G. N. Gillum, Kansas City, Mo.; "Hearing Aids in the Treatment of Deafness," J. Ernest Leuzinger, Philadelphia; "The Differentiation Between Brain, Capsular and Cord Lesions," and "Clinical Diagnosis of Diseases of the Nervous System," H. D. McClure, Kirksville, Mo.; "Practical Study of Foot Mechanics," T. L. Northup, Morristown, N. J.; "Anorectal Diseases and the General Practitioner," Frank D. Stanton, Boston; "Pain and Its Relationship to Urological Disease with Especial Emphasis on Low-Back Pain," H. Willard Sterrett, Philadelphia. F. A. Gordon, Marshalltown, Iowa, President of the A.O.A., and George W. Riley, New York City, also will speak at this meeting.

Osteopathic Clinical Society

At Hotel Harrisburger, Harrisburg, January 12, Mona Webster, Ph.D., talked on "Doctoring the School Child." Clinics were held in the afternoon.

What's New with the Advertisers

METANDREN BY MOUTH GIVES TESTICULAR HORMONE EFFECTS

New Ciba Synthetic Developed for Treating Men and Women

Metandren, a new preparation recently introduced by Ciba Pharmaceutical Products, Inc., marks another milestone of progress in male sex hormone therapy. Metandren has been shown to be the most effective androgen when administered by mouth in both animals and humans. This is decidedly valuable and convenient when the doctor deems it inadvisable to inject testosterone propionate. Metandren is especially suggested for maintenance therapy and for use by the patient who is traveling.

Metandren, Ciba's name for 17-methyltestosterone, is a synthetic, crystalline, chemically-pure compound. Although its superiority by the oral method has not yet been fully explained, Metandren is undoubtedly a full-fledged androgenic substance. Fifteen mg. of Metandren given daily in divided doses for one week is about equal in effect to three 10 mg. doses of testosterone propionate injected intramuscularly in one week.

MANY CLINICAL POSSIBILITIES

The indications for Metandren in the male in probably most conditions is where a deficiency of the testicular hormone exists. Dosage depends upon the usual factors such as degree of deficiency, age, condition, etc. Treating one eunuch and two cases of hypogonadism, one investigator found that methyltestosterone "has not only a sexual, but a general metabolic effect similar in all respects to that produced by injections of moderate doses of testosterone propionate." Subsequent observations have confirmed these results.

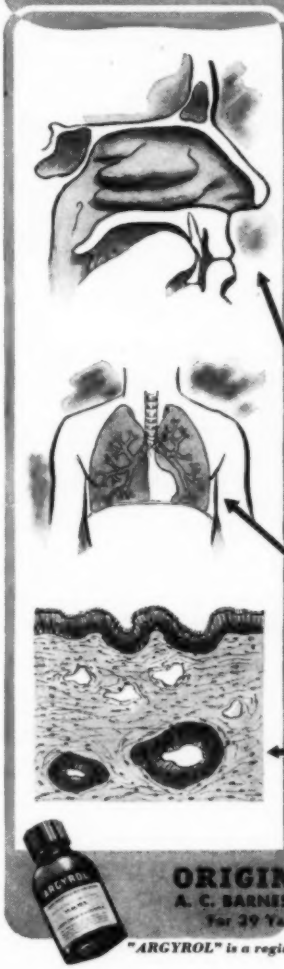
Other male deficiency states in which Metandren should prove of value include idiopathic pruritus senilis, true and pseudocryptorchidism, impotence, prostatism, sterility (the latter requiring further investigations), and the so-called male climacteric.

As various reports cite the efficacy of testosterone and its derivants in certain male conditions, Metandren should have a parallel action. If so, it can be expected that the new drug should make a place for itself in the treatment of certain menopausal disturbances, to inhibit postpartum lactation, in postpartum "after pains," excessive uterine bleeding, premenstrual tension, and selected cases of dysmenorrhea. Overdosage may be controlled by vaginal smear examinations.

Those in the profession who are interested are invited to write for more detailed information giving suggested dosages, indications, bibliography and other materials. They should address Ciba Pharmaceutical Products, Inc., Lafayette Park, Summit, New Jersey.

ARGYROL FOR ANTISEPSIS WITHOUT IRRITATION

50% SOLUTION AS BLAND AS 1%



Very seldom is it necessary to use the higher percentage solutions of ARGYROL to obtain desired results. But there is more to mucous membrane antisepsis than simply the destruction of bacteria. ARGYROL is unequalled in clinical acceptance because it achieves the ideal of antisepsis without irritation. It attacks the organisms without damaging or impairing the resistance of the tissues. Not only is ARGYROL free from the noxious properties of oily base preparations, of vasoconstrictors, or mercurials, of harsh astringents; but it is chemically, physically and therapeutically different from other mild silver proteins. Its pH and pAg are constant and controlled; its colloidal dispersion finer; its Brownian movement more active.

NO TISSUE IRRITATION, no ciliary injury: In the many millions of ARGYROL treatments that have been given, there has never been reported a case of tissue irritation on human beings due to its use. ARGYROL is so stabilized that the free ions remain constant in all concentrations from 1% to 50%. ARGYROL is always bland and non-irritating in *any concentration*, on *any tissue*.

NO PULMONARY COMPLICATIONS: Aspiration of oily base preparations employed in nasal therapeutics has led to an increasing number of lipoid pneumonias. In one institution alone, 40 of these cases have been observed. There is no such danger with ARGYROL. Indeed, ARGYROL has been repeatedly employed with safety and with favorable results in irrigation of bronchiectatic cavities.

NO HARSH ASTRINGENCY: ARGYROL is not a harsh astringent. Its action is detergent, demulcent, protective, soothing. But it causes no constriction or toughening of the tissue surfaces as do strongly astringent preparations.

INSURE YOUR RESULTS . . SPECIFY THE

ORIGINAL ARGYROL PACKAGE

A. C. BARNES COMPANY, NEW BRUNSWICK, NEW JERSEY

For 39 Years Sole Makers of ARGYROL and OVOFERRIN

"ARGYROL" is a registered trade mark, the property of A. C. Barnes Company

AN INTERESTING MAGAZINE

We have just received an advance copy of *The Bloodless Phlebotomist*, Vol. VIII, No. 6, which is usually issued in fifteen languages with a total circulation among members of the healing professions throughout the world of 1,500,000 copies. This year, however, due to the War, it will be sent to members of the professions only in English, Spanish and Portuguese speaking countries outside of the War zone.

This little journal published by the Denver Chemical Manufacturing Company of New York is replete with interesting articles written by physicians who are located in different countries and while the purpose of the publication is to acquaint its readers with Antiphlogistine and Galatest, the physicians will find a number of items and illustrations which will excite their curiosity and interest.

If you do not receive a copy write to the Denver Chemical Mfg. Company, New York, who will place your name on their list. The journal will be supplied you free of all charges.

TO TAPLIN TABLE USERS

Owners of Taplin tables will be interested to know that since the death of the inventor and manufacturer, Dr. George Taplin, his son-in-law, Mr. Andrew McKnight of 107 Park Street, Newton, Mass., has taken over the business and will take care of repairs or replacements of mobilizer, cushion, cushion cover or leather upholstering at a reasonable cost.

Baffled by PATIENTS PAST MIDDLE-AGE?

HAVE you been disappointed, even baffled, by failure of certain elderly patients to respond to specific medications and treatment? Too many times the reason lies in long years of exceedingly low vitamin-mineral levels . . . due to improper or restricted diets, poor digestive and assimilative ability, and general metabolic slow-down.

These vitamin and mineral reserves must be replenished if the body's natural defenses are to help fight disease and increase the patients' response to specific therapy. Your patients take a great step in this direction when you prescribe . . .

Vi-Syneral SPECIAL GROUP

New Vitamin-Mineral Therapy for Those Over Forty

VI-SYNERAL (Special Group) was evolved as a specially-balanced vitamin-mineral product for the middle-aged and elderly. Clinical experience pointed to the value of higher potencies of the B complex —therefore, a daily dose of 10 mg. of Nicotinic Acid and 1,000 micrograms Vitamin B_1 was combined with high potencies of Vitamin A, B_1, B_2 (G), C, D, E, and other B Complex factors (plus eight essential minerals) in SPECIAL GROUP VI-SYNERAL.

VI-SYNERAL (Regular) is also available in Funk-Dubin balanced potencies for:

ADULTS ADOLESCENTS INFANTS and CHILDREN NURSING and EXPECTANT MOTHERS

Write for detailed literature.

U. S. VITAMIN CORPORATION

250 East 43rd Street
New York, N. Y.

VITAMIN CAPSULES AND OTHER MEDICAL SUPPLIES SHIPPED TO GREECE

Nearly $10,000 worth of surgical equipment and medical supplies, including 100,000 vitamin capsules, was shipped to Greece recently by the Medical and Surgical Supply Committee of America, which has a regional branch in New York City, Mrs. Ronald B. Balcom, executive chairman, announced.

In addition to the vitamins, which were donated to the committee by the U. S. Vitamin Corporation, and which, Mrs. Balcom disclosed, are valued at more than $2,500, the other materials now on their way to Athens include 222,800 aspirin tablets; 200 dozen tubes of catgut; 16,250 injectable medications; 3 operating tables; 7,300 containers of food; 72,200 yards of assorted bandages; 3,000 tins and 600 bottles of antiseptics; 1,500 T-bandages; and 750 new and reconditioned surgical instruments.

Eight Greek physicians, assisted by volunteer nurses from several New York hospitals, took one week to prepare the material for shipment in crates and packages, Mrs. Balcom said.

Composed of more than 275 physicians and surgeons in principal cities throughout the United States, the committee only recently has begun taking up contributions of medical supplies for aiding the civilian population of Greece. A recent shipment, valued at $9,508.10, was the second within the last three weeks, Mrs. Balcom reported.

Continuing its drive for funds toward purchasing 1,000 emergency first aid kits and surgical operating sets for shipment to Great Britain, the committee yesterday acknowledged contributions from the Arion Lodge of the Knights of Pythias of Brooklyn for a first aid unit; the Bronx Hospital, one operating and one first aid set; and the Gastric Clinic of Cincinnati (Ohio) General Hospital, one first aid kit.

The Buffalo University School of Pharmacy was also cited by Mrs. Balcom for its cooperation with the committee. She said that contributions, in the form of checks, should be made out to Arthur Kunzinger of the Chase National Bank, treasurer, and mailed to the committee's headquarters, 420 Lexington Avenue, New York.

SHOES TO AVOID STATIC ELECTRICITY

Of far-reaching importance to users of modern types of anesthetics and to manufacturers with a hazard of static electricity, causing explosions, is the announcement of the O'Donnell Shoe Company, of Humboldt, Tennessee, that they have entered into full production on a patented conductive shoe. This patented shoe is specially manufactured in its entirety, and removes the danger of explosion from static electricity on the human body. Tests show that these shoes are two-thirds more efficient than is necessary to establish an electrical ground. They will be used in hospital operating rooms by nurses and doctors, arsenals, and manufacturing plants where there exists a danger from static electricity. This shoe will be of particular importance in view of the national defense program.

RESEARCH PROVES BACTERIA HAVE THEIR OWN HEALTH PROBLEMS

Bacteria vary in strength according to the stages of their life cycle, according to Dr. Harvey C. Rentschler, Director of Research for the Westinghouse Lamp Division, who presented a report based on a special 2-year study of bactericidal action of ultraviolet radiation before the American Association for the Advancement of Science at Philadelphia, January 1.

During a bacterium's weakest moments, it is from 8 to 10 times weaker than during the healthiest period of its life. In working with an ordinary culture of *E. coli*, Dr. Rentschler said, the lethal ultraviolet radiation for different individual bacteria in the same stage of their life cycle was found to differ by as much as threefold. It is thus indicated that the deadliness of bactericidal agents is not only dependent upon the family of bacteria being killed, but also whether or not the bacteria are young, middle-aged, or decrepit, as well as upon the strain of the organism.

Dr. Rentschler's research also demonstrates that bacteria may be injured by a sub-lethal dose of radia-

tion. This tends to disprove the generally accepted "single photon hit" theory for destroying bacteria, according to which bacteria are either killed or escape unscathed when subjected to lethal radiations.

NEW POLICY

F. E. Young & Co., 422 E. 75th St., Chicago, announce that they have changed their policy with respect to selling Dr. Young's Rectal Dilators and are selling them now only on prescription. They have discontinued their advertising to the public.

Books Received

THE MERCK MANUAL OF THERAPEUTICS AND MATERIA MEDICA. Seventh Edition. Flexible Binding. Pp. 1436. Price, $2.00 in the United States; $2.50 elsewhere. Merck & Company, Inc., Rahway, N. J., 1940.

PROCTOSCOPIC EXAMINATION AND DIAGNOSIS AND TREATMENT OF DIARRHEAS. By M. H. Streicher, M.S., M.D. Cloth. Pp. 149, with 39 illustrations. Price, $3.00. Charles C. Thomas, 220 E. Monroe Street, Springfield, Ill., 1940.

FOREIGN BODIES LEFT IN THE ABDOMEN. By Harry Sturgeon Crossen, M.D., and David Frederic Crossen, LL.B. Cloth. Pp. 762, with 212 illustrations. Price, $10.00. C. V. Mosby Company, 3523-25 Pine Blvd., St. Louis, 1940.

METHODS OF TREATMENT. By Logan Clendening, M.D., and Edward H. Hashinger, A.B., M.D. Seventh Edition. Cloth. Pp. 997, with 138 illustrations. Price, $10.00. C. V. Mosby Company, 3523-25 Pine Blvd., St. Louis. 1941.

THE NEW INTERNATIONAL CLINICS. New Series 3, Vol. IV. Edited by George Morris Piersol, M.D. Cloth. Pp. 326, with illustrations, December, 1940. Price, $12 a year for four issues. J. P. Lippincott Co., East Washington Square, Philadelphia.

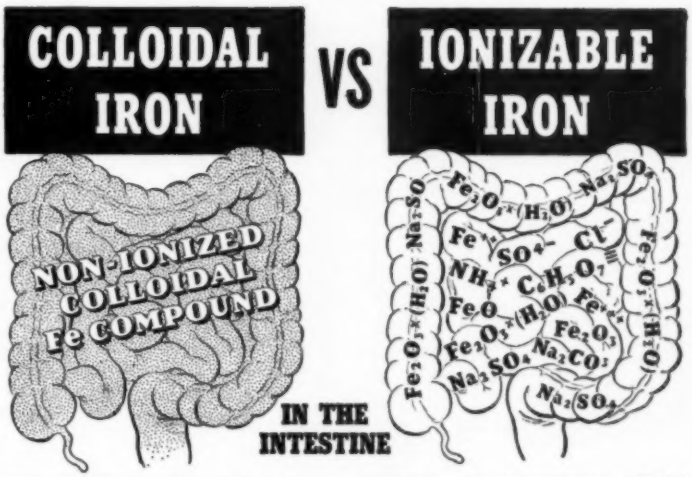
AN ALMANAC OF READING. By Charles Lee. Cloth. Pp. 133. Price, $1.00. Coward-McCann, 2 W. 45th Street, New York City, 1940.

THE CITY OF MAN: A DECLARATION ON WORLD DEMOCRACY. Cloth. Pp. 113. Price, $1.00. The Viking Press, 18 East 48th Street, New York City, 1941.

APPLIED KINESIOLOGY: WORK-STUDY GUIDE. By Ferd John Lipovetz. Paper. Pp. 85, with illustrations. Price, $2.00. Burgess Publishing Company, 426 S. Sixth Street, Minneapolis, 1939.

DISEASES OF THE DIGESTIVE SYSTEM. Edited by Sidney A. Portis, B.S., M.D., F.A.C.P. Cloth. Pp. 952, with 176 illustrations. Price, $10.00. Lea & Febiger, Washington Square, Philadelphia, 1941.

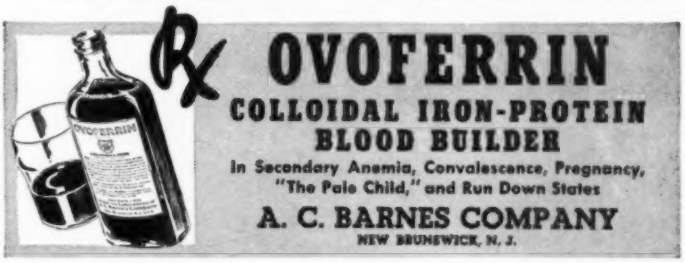
THE PRACTITIONERS LIBRARY OF MEDICINE AND SURGERY: 1940 SUPPLEMENT. George Blumer, M.A. (Yale), M.D., Supervising Editor. Cloth. Pp. 771, with illustrations. D. Appleton-Century Co., Inc., 35 W. 32nd Street, New York City, 1941.



THE STATE in which an iron preparation reaches the intestine is of maximum importance in hematinic therapy, for it is here that iron absorption takes place, and it is here also that very disturbing side reactions may occur. The iron salts leave the stomach in ionized state, and in the alkaline medium of the intestine, the iron ions are precipitated as ferrous or ferric oxides. These precipitates are relatively inert and are not readily assimilated. They are highly dehydrating and thus have a constipating effect. The salts of the acid radicals on the other hand may cause intestinal irritation. In the endeavor to overcome these effects masking, coating or sweetening are frequently resorted to in iron sulphates, citrates, etc. But in the intestine, masking and coating are cast off and sweetening is of no avail.

These side reactions cannot occur with OVOFERRIN, for OVOFERRIN is *colloidal iron*. It is iron in its most minute, most efficient colloidal subdivision. It is not in ionic form. It is not broken up by the digestive juices. It remains assimilable since nutritive material in colloidal form is readily absorbed from the intestine. As it is fully hydrated, it cannot cause dehydration and constipation. It contains no acid radical to irritate. Such is the bio-chemical basis for OVOFERRIN'S reputation as "the rapid blood-builder"—a reputation it has earned in 39 years of world wide clinical use.

Patients of all types take OVOFERRIN readily, for it is odorless and practically tasteless, and does not stain or dissolve tooth enamel. Prescribed in 11 oz. bottles; four tablespoonfuls daily at meals and bedtime, in water or milk. OVOFERRIN is also an excellent vehicle. Full size bottle gratis to physicians on request.



ORTHODIGITA: PROCEDURE AND TECHNIQUE. By Harry S. Eisenberg, Pod.G. Paper, mimeographed. Pp. 166, with 158 diagrams. Price, $1.50; deluxe binding, $2.50. Podiatry-Chiropody Publications, 711 Ocean Avenue, Brooklyn, N. Y., 1939.

MODERN DRUG ENCYCLOPEDIA AND THERAPEUTIC GUIDE. By Jacob Gutman, M.D., Phar.D., F.A.C.P. Second Edition. Cloth. Pp. 1644. Price, $7.00. New Modern Drugs, 49 W. 45th Street, New York City, 1941.

AMERICAN YOUTH TODAY. By Leslie A. Gould. Cloth. Pp. 307. Price, $2.00. Random House, 20 E. 57th Street, New York City, 1940.

CLINICAL PELLAGRA. By Seale Harris, M.D. Cloth. Pp. 494, with 66 illustrations. Price, $7.00. The C. V. Mosby Company, 3523-25 Pine Blvd., St. Louis, Mo., 1941.

Book Notices

THE PRACTICE OF MEDICINE. By Jonathan Campbell Meakins, M.D., LL.D. Third Edition. Cloth. Pp. 1430, with 516 illustrations. Price, $10.00. The C. V. Mosby Company, 3523-25 Pine Blvd., St. Louis, 1940.

Since its first appearance in 1936 this work has made for itself a sufficient place in the literature of medicine that a third edition is required. The revision made necessary by the preparation of this third edition has made it possible to bring in new material on many subjects including particularly the chemotherapy of pneumococcic infections, the role of vitamin K in the hemorrhagic states of hepatic disease, the experimental production of hypertension, the ap-

(Continued on page 20)

Timely
BARD-PARKER STERILE TRANSFER FORCEPS
for the aseptic transportation of sterile instruments and supplies to the operative field
Assures no break in the chain of sterility
PICKS UP AND HOLDS WITH AMAZING EASE...
Any instrument, from a milliner's needle to a heavy retractor or sizeable quantity of dry supplies, can be instantly picked up and firmly held by the jaws which are irregularly serrated transversely.
ACCIDENTAL CONTAMINATION IMPOSSIBLE...
As the Forceps is withdrawn, the sterile bucket rises by dependable coil spring action, to escort the jaws of the Forceps to a distance of 1 cm. beyond the unsterile lip of the jar proper.
PRESENTS ECONOMY FEATURES, TOO...
The permanent rubber guard which constitutes a barrier between the handle and sterile legs and jaws, also serves as a cover for the jar. Evaporation of the germicide is thus effectively reduced to a minimum.
BARD-PARKER FORMALDEHYDE GERMICIDE
is strongly recommended
More rapidly effective against both vegetative and spore forms of bacteria. Non-corrosive.
A Most Economical Medium
Ask your dealer
PARKER, WHITE & HEYL, INC.
Danbury, Connecticut
A BARD-PARKER PRODUCT

BOOK NOTICES

(Continued from page 19)

parent systematic correlation of the many manifestations of benign lymphogranulomatosis (Boeck's sarcoid), the systemic features of lupus erythematosis, and new conceptions of the role of the liver in circulatory failure.

DIABETES: PRACTICAL SUGGESTIONS FOR DOCTOR AND PATIENT. By Edward L. Bortz, A.B., M.D., F.A.C.P. Second Edition. Cloth. Pp. 296, with illustrations. Price, $2.50. F. A. Davis Company, 1914-16 Cherry Street, Philadelphia, 1940.

Perhaps it is fitting that a book dealing with a subject which calls for cooperative effort on the part of doctors, dieticians, social workers, laboratorians and patients should in itself be a compendium. Different authorities in this book have taken up diabetes itself, the care of the feet, surgery and diabetes, diabetes in children, dental care and diet and diet therapy.

Originally the volume was planned for the benefit of the patients in the author's own wards and clinic, but it now has been enlarged and elaborated upon with the idea of making it suitable for the use of patients in general and also valuable to physicians. Probably it is too much to expect a book of this size, after serving its purpose as instruction to the public, to have room left to be of great value to the profession.

Extracts

HEALTH ASPECTS OF SELECTIVE SERVICE

About 15 per cent of the 14,500 men in the United States who answered the first summons for one year's military training were rejected because of physical deficiencies, according to newspaper reports. Bad teeth, hernia, subnormal eyesight, flat feet, heart impairment and subnormal hearing were some of the reasons for rejection. It is probable that many of the men concerned were not previously aware of these physical defects and of their serious implications as to physical fitness.

In appraising these conditions it is well to bear in mind that the physical standards for military duty are high and that rejection does not necessarily mean unfitness for active, vigorous civilian life. Indeed, it appears that a substantial proportion of the defects which caused rejection, such as bad teeth, impaired vision and hernia, are subject to correction.

The disclosures for the medical examinations may be very helpful, therefore, if their full significance is recognized and the knowledge thus gained used in a practical way. Many of the defects might have been prevented in the first place, for example, if the causes had been discovered early enough and corrective measures taken at that time. This suggests the need for better and more general medical and health services for babies, for toddlers and for school children.

For another thing, the health of those rejected may be improved in many instances by appropriate medical care, and in any event their services in most cases can be highly valuable if they are placed in suitable productive jobs. These are problems which call for solution in the development of the national defense program and in planning for the future of the nation.

What of those who are accepted for military training? Their experience will undoubtedly have some distinct effects on both personal and public health.

First of all, the period of military service should result in the improvement in physique of young men called into the service. But also of import for the future health of our people are several other factors which are either incidental to army life or which arise from preventive and sanitary procedures of army medical service. For these reasons, military service for American youth promises to be a constructive factor in the future of the nation's public health.

It is a matter of distinct public interest to know how these long-term benefits will accrue from conscription. On the other hand, there are definite and more or less immediate hazards which some of the young draftees will face and of which the public also should be aware, because unless these hazards are known in advance and provided against, they may be a source of serious trouble.

The most serious hazard that the new draftees will face is from communicable diseases. Armies in train-

ing perforce are quartered in relatively circumscribed areas, with the result that conditions are favorable to the spread of disease of this type. There is good reason to expect, however, a much better record in this respect than during the World War. Our preparations today are not subject to the forced haste of 1917-18. Housing provisions for soldiers will be more adequate now than they were at that time and better provisions are being made in the matter of diet and in minimizing risks of the venereal and other diseases in the vicinity of military zones.

Mortality from epidemic cerebrospinal meningitis and pneumonia should be lower because effective serum and drugs for treating these diseases are now available. Venereal diseases will demand attention, but here again the methods of treatment have been improved and vigorous efforts at prevention have been initiated by both military and public health authorities.

Studies during the last war indicate the brighter side of conscription. Among the troops there was an average increase of approximately one inch chest circumference during military service, a figure that is greater than would be accounted for by the increase in average weight and age during the period. There was an appreciable decrease in the incidence of obesity, although the average draftee increased 3.4 pounds in weight. Underweight decreased and many minor impairments were corrected.

Many of the new draftees will be better nourished in the army than they were at home, because they will have a balanced and adequate diet to go with the kind of appetite brought on by out-of-doors exercise and regular hours.

Through the work of a special commission set up for that purpose, efforts will be made to utilize fully the newer knowledge of nutrition in feeding the army. The dietary will be planned to provide all the nutritional needs required for healthy living. Routine and regular living habits as well as supervised recreation will do much to build and develop substantial habits that will influence the lives of the draftees when they return to civil life.

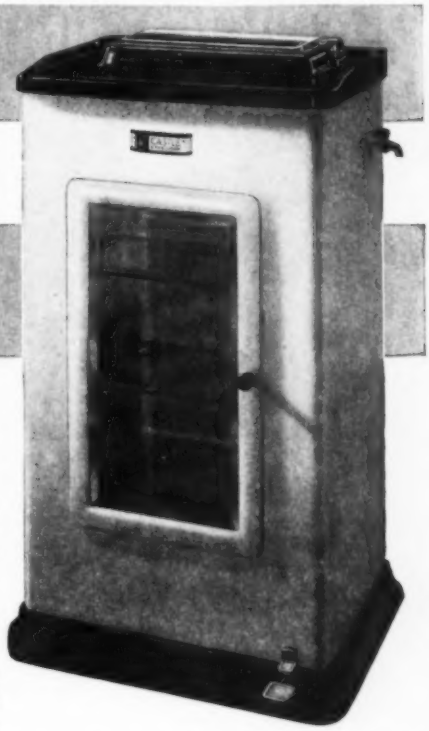
All men will be vaccinated against smallpox and immunized against typhoid fever. These men will have an influence on the home folks' attitude toward preventive medicine when they return to civil life.

It should be most assuring to both draftees and their families that the general health record of our army has been at its best in recent years. The mortality from disease has fallen appreciably. During the five years 1933-37 the average death rate from disease declined 10 per cent from that of the preceding five-year period. The pneumonia death rate fell 13 per cent in this interval and the tuberculosis rate nearly 35 per cent.

In general the American people can expect substantial benefits in terms of health as a by-product of the training of the new draft army. A sturdier physique, a definite health consciousness and improved hygienic habits will go far to offset the inevitable hazards of the military experience facing our youth.—*Illinois Health Messenger*, January 15, 1941.

CASTLE "THE MARK OF A CAREFUL PRACTITIONER"

YOUR FIRST LINE OF DEFENSE



A STAUNCH first line of defense, armored by hospital standards of sterilizing safety, stands between your patients and the dangers of cross infections when you add a Castle "55" to your office equipment.

"The Mark of A Careful Practitioner" Castle Sterilizers stand for the best in sterilizer design. CAST-IN-BRONZE Boiler assures a life-time of trouble-free operation. Has "Full-Automatic" heat control for safety and dependability. Hospital type foot lift prevents hand contamination. China top will never stain, and the lighted cabinet gleams through a beveled glass door.

WILMOT CASTLE COMPANY
1150 UNIVERSITY AVENUE ROCHESTER, N. Y.

CASTLE STERILIZERS

SOCIAL HYGIENE

In observing the fifth anniversary of National Social Hygiene Day, which falls on February 5, emphasis in Illinois will be placed on the control of venereal diseases in the vicinity of military posts and in the vicinity of industries and munitions factories which have attracted a large influx of population. Risk of infection with venereal diseases has always been greatly increased under such circumstances.

Thousands of young men are leaving their homes and families, many of them for the first time, for military training and for employment under new and to them strange circumstances. Many of these young men are prone to expose themselves to infection with venereal diseases, opportunity of which invariably increases under such conditions. Health officers and military authorities have arranged to work together closely in an effort to minimize the hazards of venereal diseases as well as of infections which may be spread through faulty sanitation and unhygienic living conditions.

In some areas where munitions factories are under construction local officials and civic minded citizens have organized health committees already to deal with problems that may arise.

The State Department of Public Health has arranged to organize a spe-

(Continued on page 22)

An ELECTRO-SURGICAL UNIT with

NOT JUST THIS (Tube-Generated)

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(3) *individual control pedals . . .*

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EXTRACTS

(Continued from page 21)

cial mobile staff, consisting of a health officer, a public health nurse and a sanitary engineer, which may be assigned to duty on a temporary basis at any point where local circumstances created by the national defense program may require.

State health authorities foresee clearly the health problems which are likely to arise, and are utilizing all resources at their command to be prepared to meet and solve these problems as nearly as possible. Public interest and vigorous public support will be needed, however, to succeed in this important work.

Since the risk of venereal diseases is a major problem in connection with the national defense program, a general popular observance of National Social Hygiene Day will be very helpful in stimulating popular interest and support in the work of the health authorities. — *Illinois Health Messenger,* Jan. 1, 1941, p. 1.

IN ONE EAR AND OUT THE OTHER

Progressive deafness comes on so gradually and so insidiously that it frequently goes unnoticed until it becomes too severe to be corrected. Last year's reports from Johns Hopkins University, based on a fourteen-year study involving nearly 15,000 hearing tests, concluded that the most common type of adult deafness has its beginning in childhood.

This finding corroborates the long-standing theory that hearing impairments should be discovered and, if possible, treated during the early years of life. School health doctors in many Illinois communities have long made hearing tests a routine practice in grade schools. When the tests are made by trained persons with a reliable audiometer, the school health experts usually find about one child in sixteen or twenty to have a significant loss of hearing.

According to the New York League for the Hard of Hearing, there are many possible causes for these impairments. The simplest cause, of course, is hardened ear wax. The accumulation of a mass of wax in the ear canal is merely a mechanical obstruction, keeping out sounds. In such cases the physician can restore the hearing at once by carefully removing the impacted wax.

More complicated hearing defects may be caused by neglected running ears, enlarged and diseased tonsils, adenoids, colds, and such diseases as scarlet fever, measles, diphtheria, mumps, grippe, syphilis, or meningitis.

For many years school health nurses have warned both parents and children to protect the ears as carefully as they protect the eyes. But, in large measure, the warnings seem to have gone "In one ear and out the other." Probably the reason for this is that gradual loss of hearing is far less dramatic than sudden loss of vision. Very often a child manages to get through grade school passably in spite of a progressive difficulty in hearing.

However, adult deafness is often a serious vocational handicap. The Illinois Division of Rehabilitation has had to assist a considerable number of deafened Illinois residents, of the over-sixteen age group, with tuition and material for special vocational training.

Medical treatment and vocational training are of unquestioned value in helping the deafened to live useful and normal lives, even though complete restoration of the sense of hearing is rarely attained. The best hope that medical science can offer at present is the possible preservation, in certain forms and degrees of deafness, of whatever hearing the individual still retains. Sometimes a mechanical hearing aid is prescribed. Usually the hard of hearing person finds great satisfaction in learning to read lips.

Excellent though the modern services offered to the deaf may be, a greater service to the next generation of adults could be performed by careful advance attention to their ears right now, while they are little children. Primarily this is the responsibility of the parents.

The methods of avoiding ear trouble are not simple. There is no ready-made inoculation that will prevent deafness. But there are several very definite things that may be done to protect the ears. These include:

1. Immunization for diphtheria.
2. Avoidance of colds and respiratory diseases.
3. Qualified medical care during illness, and especially at the first signs of ear trouble.
4. Prompt removal of tonsils and adenoids if the physician recommends it.
5. Annual health examinations, with hearing tests.
6. Cautious (never violent) nose-blowing.

7. Protection of ears in swimming and diving.

8. Protection of ears from external injuries (caused by poking into the ears with sharp instruments, or by boxing the ears).

9. Building positive health and general resistance (through fresh air, nutritious diet, sufficient sleep, outdoor exercise, etc.).

Records are available which show that of 133,042 school children in various Illinois communities who were tested during the last two years with audiometers, 7,163 had significant impairment in hearing. — *Illinois Health Messenger,* January 1, 1941, p. 4.

DELETERIOUS EFFECTS OF SULFANILAMIDE

O. Edwin Owen, D.O.
Department of Pathology
Des Moines Still College of Osteopathy
Des Moines, Iowa

During the past few years the drug sulfanilamide and its derivatives have sprung into rapid use in the treatment of a great many diseases. Only a cursory glance at the volumes of current literature on the subject need be given to learn that this group of drugs is a "two-edged sword." This brief paper does not intend to touch upon the many desirable features of the drugs but rather to point out the dangers in their use so that they may be more carefully guarded.

Mode of Action. — Sulfanilamide is readily absorbed and excreted and is recovered in all body fluids. It is absorbed in four hours from the digestive tract. Sulfanilamide does not arouse a specific response on the part of the host and does not stimulate antibody production. It has no direct effect upon phagocytic activity and neither does it have a desirable effect upon the reticuloendothelial system. The present interpretation of the action of sulfanilamide is that bacteria are weakened or degraded, so that their elimination by the white blood cells and tissue phagocytes is possible. This is the desired effect of sulfanilamide and its derivatives. At the same time, a number of deleterious effects may take place which must be carefully understood and interpreted by the physician.

I. CYANOSIS

In some patients cyanosis will begin soon after administration and is due to:

A. Methemoglobinemia. This is produced by a chemical combination of sulfone or SO_2 radical of these drugs with hemoglobin, thus preventing it from uniting normally with oxygen. Cyanosis is not as dangerous as one time thought to be.

B. Sulfhemoglobinemia. This is produced by the union of hydrogen sulfide radical of sulfanilamide with hemoglobin. During the use of sulfanilamide it is thought that there may be an increased absorption of hydrogen sulfide from the bowel as saline cathartics are used, or if foods such as beans, cheese, clams, cocoa or bran are included in the diet. One to two grains of methylene blue by mouth every four hours will often relieve the symptoms of cyanosis.

BARAVIT is more than just an excellent "bulk laxative." It supplies reinforced vitamin B complex to follow up direct relief with ultimate restoration of more vigorous intestinal function. Constipation was shown to be the outstanding effect of B-deprivation in healthy persons studied at the Mayo Clinic. BARAVIT is effective for the dual deficiency of both bulk and B complex in functional constipation.

BARAVIT

After BARAVIT there is better stimulation of "the mass reflex," the stool is softer—gliding more comfortably along the intestinal tract without distress or urgency. The muscular coat acquires more vigorous function and movements occur at appropriate intervals with utter ease and a sense of complete satisfaction. Prescribe BARAVIT* for dual action, bulk for direct relief, B complex for ultimate restoration.

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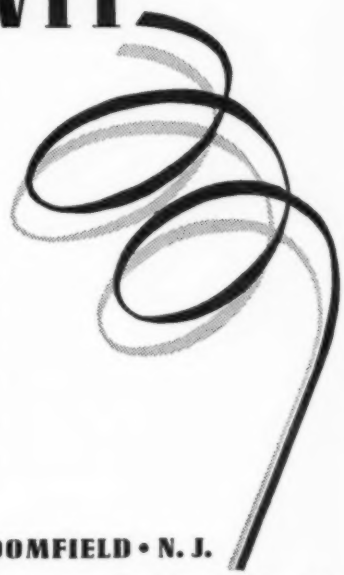

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II. GASTRIC INTOLERANCE

Some patients show a local irritation to the gastric mucosa but it is not a constant finding.

III. CENTRAL NERVOUS SYSTEM REACTIONS

Cerebral excitability, insomnia, restlessness, delirium, drowsiness, stupor and dizziness are symptoms which indicate reduction in dosage or even discontinuance of the drug. Ambulant patients should be cautioned of these symptoms, particularly automobile drivers.

IV. SKIN REACTIONS

Purpuric, urticarial, scarlatinal, erythematous, rubellaform, and exfoliative dermatitis reaction may enforce discontinuation of the drug and even be the precursors of renal complications.

V. HEPATIC REACTIONS

Hemolytic jaundice may appear, due to overloading of the liver with hemolytic pigments from the rapid destruction of erythrocytes. This is characterized by nausea, vomiting, jaundice, and bile in the urine. This is a serious warning—a precursor of anemia.

Toxic hepatitis may be brought on by a toxic effect of the drug upon the liver cells and is characterized by nausea, vomiting, jaundice, excessive bile in the urine, enlargement of the liver

Pruritus Vulvae

★Of all gynecologic involvements, pruritus vulvae probably produces the greatest degree of psychic trauma. Itching of the vulva frequently requires curtailment of social and business activities; if permitted to go uncontrolled, it may even lead to adverse personality changes. Although the causes of pruritus vulvae are many, thus calling for a thorough, time-consuming diagnostic search, the patient need not be deprived of the immediate relief so urgently demanded. Calmitol Ointment quickly brings the tormenting pruritus under control. Applied directly onto the vulva, it exerts its action upon the sensory nerve endings, producing relief for prolonged periods. Soothing, cooling, and protective, Calmitol Ointment may be employed in conjunction with any type of specific therapy that may be indicated.

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Because of its contained ingredients (chlor-iodo-camphoric aldehyde, levo-hyoscine oleinate, and menthol in an alcohol-chloroform-ether vehicle), Calmitol Ointment blocks the further transmission of offending impulses, exerts a mild antiseptic action, contributes to resolution by local hyperemia. In obstinately severe pruritus, Calmitol Liquid is recommended prior to application of Calmitol Ointment, except on sensitive areas or denuded surfaces.

CALMITOL

THE DEPENDABLE ANTI-PRURITIC

EXTRACTS

(Continued from page 23)

and high bilirubin content of the blood plasma. These hepatic reactions are often associated with dermatitis and may be followed by renal complications. The drug must be stopped.

VI. ANEMIAS

Anemia may be produced by the destruction of erythrocytes by the drug.

1. A mild, *simple anemia* may appear after several days of administration, with a drop both in erythrocytes and hemoglobin. This is more common with sulfanilamide. The drug may be continued, if large doses of vitamin B_1 are used.

2. An acute, *hemo'ytic anemia* may develop during the first week of treatment which will become progressively severe. It is rare with sulfanilamide but common with sulfapyridine. The anemia is characterized by a rapid fall in erythrocytes and hemoglobin, macrocytosis, reticulocytosis, leukocytosis, jaundice, hematuria and albuminuria. The drug should be discontinued; fluids forced; liver, iron, and vitamin B_1 administered; and perhaps a blood transfusion given.

VII. AGRANULOCYTOSIS

This is one of the more dangerous complications, appearing late—after perhaps two weeks of administration of sulfapyridine, in particular. It is caused by the depressing effect of the benzine ring contained in the drug, upon the blood-forming organs. There will be a marked lowering of the white count, with relative decrease in neutrophils; temperature; weakness; gastric distress; generalized glandular enlargement; enlargement of the liver and spleen; inflammatory edema of the throat and mouth, with white patches resembling Vincent's angina, may be necrosis of the membranes; blood-casts and albumin in the urine. These symptoms *may* appear several days after discontinuation of the drug. Guard against too hasty dismissal of patient. Immediate treatment including blood transfusions must be administered.

VIII. RENAL COMPLICATIONS

1. Simple albuminuria without casts or blood cells and without nitrogen retention. This symptom will clear if the drug is discontinued or the dosage reduced and fluids forced.

2. Nephritis is a more serious complication. It is more apt to occur with sulfapyridine, particularly if the fluid intake is low. The intake of fluid should be not below 3000 cc. in 24 hours. The signs will be albuminuria, casts, anuria, increased non-protein nitrogen of blood and edema. Nephritis is a contra-indication for the drug.

3. Urinary calculi formation is even more serious. Their formation follows the use of sulfapyridine and sulfathiazole. Crystals of acetylsulfapyridine and acetylsulfanilamide form in the pelves of the kidneys and the ureters, and may be demonstrated by X-ray. Obstruction may cause dilation of the pelvis, hematuria, pyelitis and pyelonephritis. The crystals form when there is decreased urinary output with supersaturation of the urine and is favored by highly alkaline urine. The pH of the urine should be kept at about 7.0. There is a question as to whether sodium bicarbonate should be used routinely in the light of calculus formation in the presence of highly alkaline urine.

This brief survey of some of the more important deleterious effects of sulfanilamide and its derivatives is not intended to discourage the use of these drugs in the treatment of diseases where indicated but rather to point the way toward more careful administration.—*The Log Book*, January 15, 1941.

OSTEOPATHY IN THE NEWS

After your columnist had gone skiing down the mountainside — part of the way on the nape of his neck—

And after he had presented an acrobatic exhibition of ground and lofty tumbling, seldom equalled and never surpassed on this or any other stage, he had a crick in his back.

An eminent physician obligingly taped the recalcitrant back and prescribed a varied assortment of pills.

The back obstinately refused to respond to treatment.

Mr. E. W. Kower, tall and strong and young, who skis skillfully and without cartwheels and contortions, sized up the situation.

He said:

"Young fellah"—an intimate and friendly but wholly inaccurate designation—"you have a misplaced vertebra.

"Pills do not reach it and tape only retains it in the wrong place.

"What you need is an osteopath—someone who knows how to snap the vagrant bone back into place.

"We have lots of these bone displacements up here in the woods.

"The lumbermen labor in perilous paths.

"They lift heavy weights, they dodge the branches of falling trees, they balance on great logs floating in the rivers.

"They have an ill or an ache or an injury occasionally.

"If it is a bone displacement they see an osteopath and he puts them to rights."

So we adjourned to see a well-known local osteopath, a pleasant gentleman with a clear blue eye and a strong arm—in fact two of each—and he probably needs both when straightening out some of the husky mountaineers of these regions.

"Simple displacement," says the doctor reassuringly.

"Lock your hands behind your head."

Snap.

Five dollars.

It is all over.

And although you came in bent and in pain, there you stand now straight as one of the pine trees of the forest and feeling as strong and independent as they.

On the way home, Mr. Kower, who is the son of a professor at the University of California, and is brimful of information, explains scientifically.

"The muscles," says he, "are supposed to hold the bones in place.

"They are supposed to and they do as a rule; but sometimes the muscles are taken off their guard, are caught napping as it were.

"Then a sudden lurch to larboard slips a vertebra, let us say, out of line before the muscles can stop it.

"Then what is needed is a sudden and scientific countersnap to put it back into place.

"You cannot do it with a pill; you do not need a scalpel."

Your columnist agrees.

Surely these knights of the dislocated joint have their proper place in medical science and merit more encouragement than they get from lay or learned.

Surely that branch of the science deserves a greater development than it has had.

Those of us who are old enough remember the great Dr. Lorenz, who came all the way from Vienna to Chicago to cure the little daughter of Ogden Armour of a misplaced hip bone.

He cured her and received a fifty thousand dollar fee for the deed.

Then out of the goodness of his heart and just to show that he did not operate for money alone, he went among the poor who could not pay fifty thousand dollar fees, and healed many of them without charge and for the simple satisfaction of doing good.

He was just a sublimated osteopath.

His example should have shown—more than it has done—what can be accomplished in that branch of medical science.

But while there has been some development in this bone-setting and straightening and regulating direction, there has not been, by any means, what there should have been.

AOA 2-41

An osteopath has just as much right and proper place in medicine as—let us say—a dentist.

He is, or should be, a specialist and in a most important sphere.

What are we composed of anyway? Flesh and blood and bones.

The bones are a most essential part of our structure—a sustaining part—the framework around which the rest of the body is disposed.

That framework should be kept in perfect adjustment and repair.

The gentlemen who devote themselves to that worthy science for our benefit are performing an important service,—a service, too, which demands knowledge and skill and specialization.

Why, therefore, does the hair on the average medical doctor's back rise up when you mention osteopathy?

Is it because osteopaths do not place quite as complete reliance upon pills and potions and poultices as the orthodox doctors do?

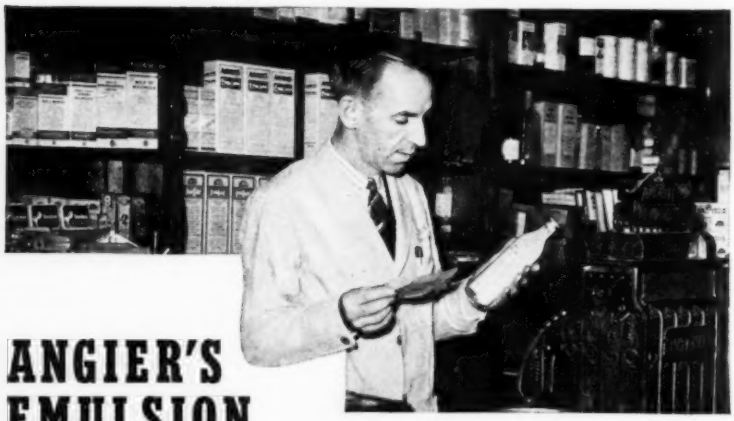
It is because osteopaths think more highly of diathetics, therapeutics and what one might call the mechanics of the human structure.

Well, it is too bad that there is this disagreement because there are some things which pills and potions and poultices do not cure.

When you have a bad tooth you go to a dentist.

When you have a broken bone you go to a surgeon, but if you have a kink in your back your columnist timidly and tentatively recommends an osteopath—and also, incidentally, recommends that if you are a relic of the Silurian age,

(Continued on page 26)



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EXTRACTS

(Continued from page 25)

you do not overindulge in youthful sports.

The personal equation enters into all these matters.

A friend of long ago, Louis Mann, the celebrated Jewish comedian, used to tell a story of a gentleman whose son was about to make his debut as a violinist.

The gentleman prepared a great feast at a leading hotel.

He invited all of his friends to attend the debut and—if his son was a success—to meet at the hotel and enjoy the splendid repast.

The eventful evening arrived; the boy appeared.

He was a terrific flop.

The gentleman hurried to the hotel to countermand the sumptuous supper.

He found his friends already assembled there eating liberally and drinking joyously.

"What are you doing here?" said the dismayed gentleman.

"I said we would assemble to celebrate IF the boy was a success—and he was a failure."

"Not with us he wasn't," chorused the guests. "Ve liked him."

That is the way with everybody.

Everything depends largely on the point of view, on individual interest, on personal experience.

Say the physicians who do not approve of osteopaths:

"But all osteopaths are not good."

True enough, possibly, but then all doctors are not good, and all jurists are not good, and even all journalists may not be quite as perfect as "thee and me."

He who looks for absolute perfection in humankind, himself needs a doctor—a psychopath.

However, those of us guinea pig patients who have had inconvenient kinks in our backs removed by a scientific snap to starboard think there is a lot of reason and a lot of room for osteopathy.

The orthodox medical doctors may claim that osteopaths are a flop, but not to us they aren't.

"Ve like 'em."

—*Chicago Herald American, January 28.*—Syndicated article written for the Hearst papers by William Randolph Hearst and reprinted with his permission.

A COMMON ERROR IN OBTAINING SPECIMENS FOR THE CULTURAL DIAGNOSIS OF GONOCOCCAL INFECTION IN WOMEN

Frederick G. Gillick, M.D., S. Edward Sulkin, Ph.D., and Leroy J. Stephens, M.D., St. Louis, Mo.

The practicability of the cultural method for the diagnosis of gonococcal infection has been demonstrated by numerous investigators[1, 2, 3] and many laboratory difficulties have been eliminated with the introduction of the methods reported by McCleod and his associates[4] and by Carpenter and his coworkers[5, 6, 7]. Approximately twice as many cases of gonorrhea were detected by the cultural method as by the usual "smear" method[3]; in many instances the gonococcus was isolated from treated cases in which repeated microscopic examinations were negative. The cultural method, besides aiding materially in establishing a definite diagnosis in doubtful cases, is indispensable in cases involving medicolegal proceedings, since isolation and identification of the organism, Neisseria gonorrhoeae, eliminates doubt as to the etiology of the infection.

The efficiency of any laboratory procedure depends upon the nature of the specimens submitted and the conditions under which they are obtained. This is especially true of specimens submitted for laboratory diagnosis of gonorrhea. In recently recommended procedures for the collection of specimens from women, the American Neisserian Medical Society[7, 8] stated that "no lubricant should be used on the speculum before introducing same, unless absolutely necessary." Failure to observe this recommendation has probably been the most important single cause of lack of success with the cultural method. It is the purpose of this report to emphasize the importance of "technic" in obtaining specimens.

During the seven-month period from June, 1939, to January, 1940, a total of 2,634 examinations for the diagnosis of gonococcal infection in women were made, using the cultural and smear methods simultaneously. In the latter part of August the volume of work increased considerably, necessitating the addition of several workers to the clinic staff. A decrease in the efficiency of the cultural method immediately became apparent. The technic used in the bacteriologic laboratory was check-

From the Venereal Disease Control Service and the Laboratory Section of the St. Louis Health Division.

This study is incidental to the venereal disease control program sponsored by the St. Louis Health Division in cooperation with the United States Public Health Service.

ed at once by a series of cultural examinations on specimens from known cases of acute gonorrhea in the male. It appeared that the cultural method was working very effectively. In the collection of specimens from women, however, a thick jelly lubricant was applied to the speculum used for making clinical observations. Realizing that the lubricant might be responsible for the sudden decrease in efficiency of the cultural method, it was suggested that the lubricant be diluted and the detailed pelvic examination be deferred until specimens were obtained. There was a gradual rise in the efficiency of the cultural method, but results were still unsatisfactory. It was then recommended that no lubricant (or a minimum) be used on the speculum, and a prompt increase in the effectiveness of the cultural method occurred. . . .

A complete analysis of the 2,634 specimens examined [was made]. Positive findings were obtained in 326, or 12.38 per cent, of the total number of examinations made. The cultural method was positive in 260, or 80.0 per cent, of instances, while smears were positive in 165, or only 50.6 per cent, of the examinations. The cultural method was therefore 1.57 times more efficient than the smear method, a superiority of 157 per cent. The combined cultural and smear method was 1.97 times more efficient than the smear method alone. During August, September, and October, when the lubricant was in use, the cultural method was only 1.16 times more efficient than the smear method and during the month of September the smear method was 1.37 times more efficient than the cultural method.

SUMMARY

It is obvious that the use of a lubricant in obtaining specimens for the diagnosis of gonococcal infection in women leads to frequent errors in diagnosis. Too little importance has been attached to this fact in carrying out diagnostic procedures. The use of a lubricant is undoubtedly one of the reasons for the lack of success with the cultural method in some venereal disease clinics and diagnostic laboratories.

Acknowledgment.—We wish to acknowledge the assistance of Dr. Joseph C. Willett and staff of the Laboratory Section, and of Doctors Paul F. Fletcher and Erwin T. Huber of the Venereal Disease Control Service of the

★ ★

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and the Winter Diet

During the cold months the average American diet tends toward fats and carbohydrates in larger quantities, with a corresponding decrease in fresh fruits and green vegetables.

Thus, during these months, the importance of citrus in the diet becomes even more marked.

Grapefruit and grapefruit juice are prime sources of Vitamin C, and good sources of thiamin and riboflavin. They help the body assimilate more calcium *supplied in other foods.*

Fresh grapefruit is one of the least costly sources of ascorbic acid (Vitamin C), while canned juice is the cheapest of all, with the sole exception of cabbage.

The fresh, tart flavor of grapefruit pleases most people, and large quantities of it can be taken without cloying the appetite.

Members of the medical profession desiring a complete and authoritative treatise on the health benefits of grapefruit are invited to use the coupon for a complimentary copy of the recent publication of the Florida Citrus Commission, entitled "Citrus Fruits and Health."

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St. Louis Health Division. We also wish to thank Dr. Joseph F. Bredeck, Health Commissioner, for his interest in this work.

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Venereal Disease Information, September, 1940.

A RAPID THICK FILM BLOOD STAIN

By Louis Michelson, Medical Technician, and Aimee Wilcox, Assistant Technologist, National Institute of Health, United States Public Health Service

A combined Wright-Giemsa rapid staining method for blood parasites, particularly malaria parasites, is described here. This stain has the advantage of reducing thick film staining and washing time from 50 to 11 minutes. American manufactured dyes are used, thus reducing the cost of thick film staining for those who have used foreign-made dyes. The stain has been tried repeatedly on the three species of human malaria parasites in thick and thin films and on trypanosomes in the thin film with very satisfactory results. If directions are followed, it is eminently satisfactory for diagnostic purposes and quite superior to many of the Giemsa stains which are obtainable for this purpose.

A. Preparation of Wright-Giemsa Solution From Giemsa Powder and Wright's Solution

Place 100 cc. of glycerine, C. P., anhydrous, in a bottle of 1 liter capacity which has a tightly-fitted screw cap or stopper. Weigh accurately 1.515 gm. Giemsa powder (National Aniline Dye Co., N Ge-3) and suspend in glycerine. Fit stopper tightly, cover entire bottle neck with a double thickness of wrapping paper, and secure with large elastic bands. (These precautions are taken to prevent moisture from being absorbed by the Giemsa-glycerine mixture during the heating period in the water bath.)

Heat the bottle of Giemsa-glycerine mixture in the water bath at 55°-60° C. for 2 hours, mixing well with a glass stirring rod at half-hour intervals. At each stirring, remove bottle from water bath. After 2 hours, remove from water bath and allow to cool. Then add 100 cc. of unfiltered Wright's Stain Solution (B) to the bottle of Giemsa-glycerine solution. Mix well by vigorous shaking and let stand overnight. On the next morning add 800 cc. of unfiltered Wright's Stain Solution (B) to the above mixture. Shake vigorously. Filter into a small bottle the amount of stain needed for a few days' staining. Stain requires no aging and can be used immediately.

B. Preparation of Wright's Stain Solution From Powder (National Aniline Dye Co.)

Place 1,000 cc. of methyl alcohol, acetone free, neutral, and preferably redistilled, in a bottle of 1 liter capacity which has a tightly-fitted screw cap or stopper. Weigh accurately 2 gm. Wright's powder and dissolve in the methyl alcohol. Wrap the bottle in paper and store in a dark place protected from ammonia fumes for at least 1 month. At frequent intervals while stain is aging shake bottle vigorously. At the end of one month, test for staining properties. The Wright's Stain Solution must give satisfactory blood-cell staining before it can be used in the preparation of this Wright-Giemsa stain.

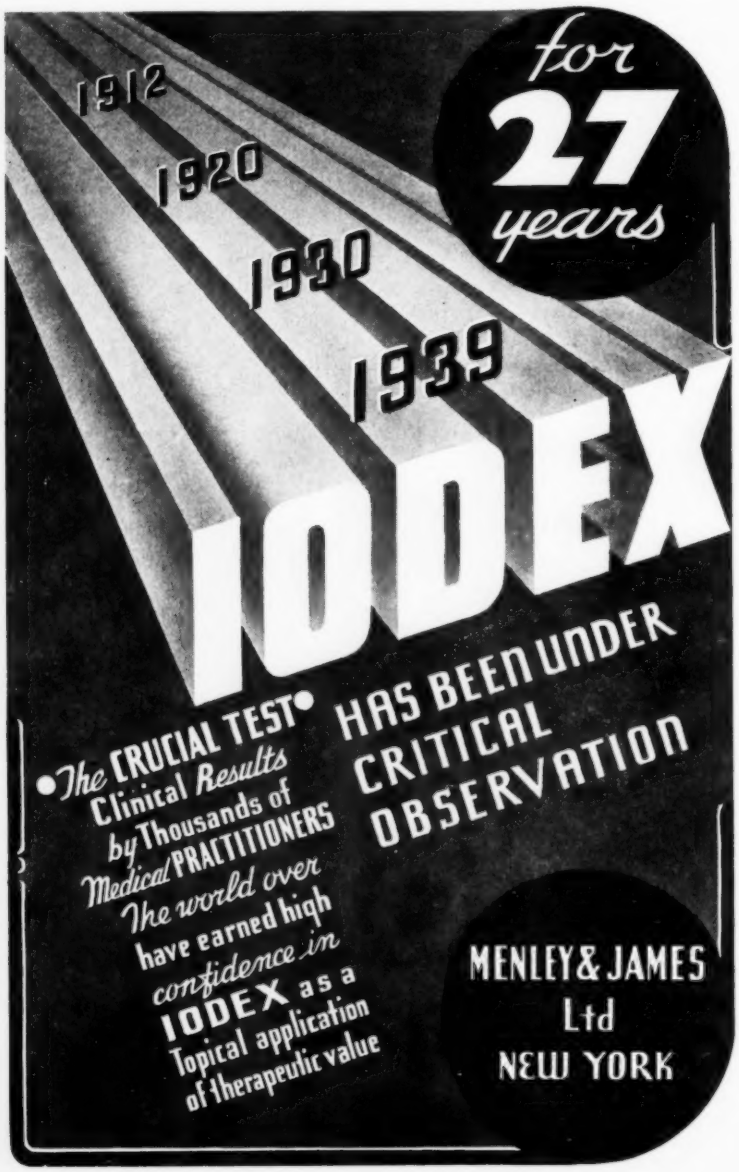
IMPORTANT.—All ingredients must be of reagent quality, preferably from freshly opened bottles. All glassware must be chemically clean and perfectly dry.

Rapid method for thick films:

1. Dilute stock stain 1:10 with distilled water buffered to pH 7.0. Mix well in a graduate or other container.

2. Stand blood films on end in an empty staining dish. Rapidly deliver over them enough diluted stain to reach about one inch above the film. Stain for 10 minutes.

3. To wash the films, first rapidly flood off the scum from the top of the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stain with neutral distilled water, then remove the smears and place them in clear neutral distilled water for one minute.

4. Air dry and examine with oil immersion objective.

Thin films may be stained by practically the same process. However, before staining they should be fixed with methyl alcohol for one minute, placed on the side or end in a staining dish and the stain poured over them while the films are still wet with alcohol. This last step aids in assuring a smear which is free of precipitate and scum. For washing thin films flood off the scum from the top of stain and then dip each slide two or three times in clear neutral distilled water. Prolonged washing lessens staining detail. This method gives satisfactory results for differential blood counts.

This stain may be used by a prolonged method also for staining thick films.

1. Dilute stock stain 1:40 with neutral distilled water. Mix well.

2. Pour the stain over the slides in the staining dish. Stain for 45 minutes.

3. Flood off scum from top of stain and stand slides in neutral distilled water for *1 minute*.

4. Air dry. Examine.

Thin films may be stained by the prolonged method if the same precautions mentioned under the rapid method are observed.

Public Health Reports, July 5, 1940.

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Barr, Otis, from 114½ S. Grand Blvd., to 300 E. Main, Cherokee, Okla.

Black, Florus R., from Bloomington, Ill., to 5 Arcade Bldg., Lincoln, Ill.

Blackwood, E. E., from Wilburton, Okla., to Hartshorne, Okla.

Brasier, E. F., from Trenary, Mich., to 217½ Central Ave., Marshfield, Wis.

Brown, H. Willard, from Springfield, Ill., to State Nat'l Bank Bldg., Garland, Texas, also 5003 Ross Ave., Dallas, Texas.

Brown, J. Valen, from Pueblo, Colo., to 1550 Lincoln, Denver, Colo.

Clark, Forrest W., from 5208 S. Huntington Drive, to 5020 Huntington Drive, S., Los Angeles, Calif.

Corlis, Blanche A., from 238 Pearl St., to 1008 W. Center St., Medina, N. Y.

Corlis, Theodore C., from 238 Pearl St., to 1008 W. Center St., Medina, N. Y.

Cozen, John E., from 5020 Huntington Drive, to 515 E. Sixth St., Los Angeles, Calif.

Cronin, J. Joseph, from 479 Commonwealth Ave., to 370 Commonwealth Ave., Boston, Mass.

De Weese, Byrne, from Kansas City, Mo., to 515 E. Main St., Kent, Ohio.

Dornbush, Frank D., from Cove Theatre Bldg., to Main & Lee St., Hollidays Cove, W. Va.

Dorwart, R. E., from Cannon Bldg., to 126 N. Sixth St., Grand Junction, Colo.

Duncan, Norman L., from Los Angeles, Calif., to 424 N. Laurel Ave., Ontario, Calif.

Fiala, Richard R., from 1100 N. Mission Road, to 235 S. Oxford, Los Angeles, Calif.

Furby, J. F., from Saginaw, Mich., to 211½ S. Orange Ave., Orlando, Fla.

Garland, Hugh W., from Los Angeles, Calif., to 1709 S. Ethel Ave., Alhambra, Calif.

Gingerich, L. E., from 407 Congress Bldg., to 906 Congress Bldg., Miami, Fla.

Gramolini, C. J., from Cyril, Okla., to 312-13 Koehler Bldg., Lawton, Okla.

Granicher, Doris A., from Glendale, Calif., to 243 S. Spring St., Los Angeles, Calif.

Hanna, Lawton M., from Sanneman Bldg., to U. S. 24 at K.15, Clay Center, Kans.

Haynes, Harvey L., from Laporte, Colo., to Templeton Bldg., Salt Lake City, Utah.

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Jones, C. E., from 227 Vreeland Ave., to 303 Highfield Lane, Nutley, N. J.

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Jones, Margaret, from 3620 Troost Ave., to 3737 Main St., Kansas City, Mo.

Jordt, Dorothy K., from Cloverdale, Calif., to 449 W. Center St., Anaheim, Calif.

Jordt, Edward W., from Cloverdale, Calif., to 449 W. Center St., Anaheim, Calif.

Kohler, Kenneth D., from Spokane, Wash., to 53 Higgins Block, Missoula, Mont.

Kowitt, S. N., from 6540 Sunset Blvd., to 6406 Sunset Blvd., Hollywood, Los Angeles, Calif.

Larson, R. Terry, from St. Louis, Mo., to Fairfax House, 8028 Forsythe Blvd., Clayton, Mo.

Levine, Alex, from Bayonne, N. J., to 1911 Boulevard, Jersey City, N. J.

Linder, L. W., from 1003 Tribune Telegram Bldg., to 205 Judge Bldg., Salt Lake City, Utah.

Love, Joseph L., from 218-19 Littlefield Bldg., to 302-03 Tribune Tower, Austin, Texas.

Lovejoy, Ashley C., from Winter Haven, Fla., to Groveland, Fla.

Maas, W. E., from Seattle, Wash., to Home Acres, Wahkiacus, Wash.

(Continued on page 31)

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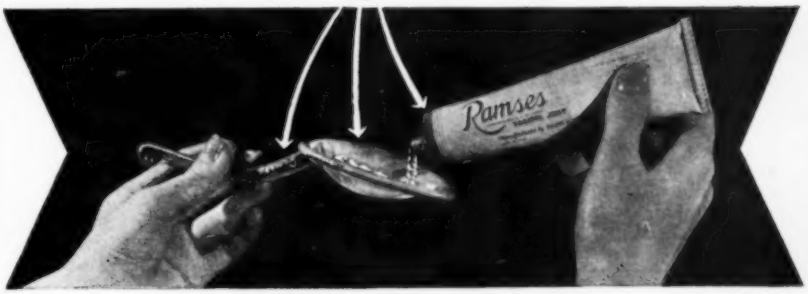

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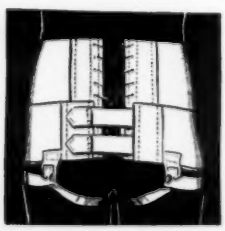
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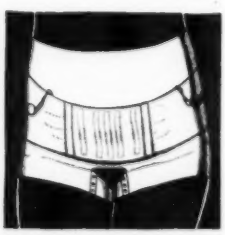

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Mattison, Roland G., from Kirksville, Mo., to Arlington, Vt.
Mays, R. C., from St. Petersburg, Fla., to 146 Sixth Ave., N. E., Sarasota, Fla.
McConaughy, Mary Alice, from South Pasadena, Calif., to 2511 Huntington Drive, San Marino, Calif.
Miller, L. Upton, from 4757 S. Broadway, to 3314 W. Vernon Ave., Los Angeles, Calif.
Mitnick, Nathan, from Weymouth, Mass., to 4359 Fleming St., Roxborough, Philadelphia, Pa.
Olney, Frank L., from Decatur, Ill., to Cryer Clinic, El Paso, Ill.
Paul, John F., from Detroit, Mich., to 601 Washington, New Baltimore, Mich.
Robinson, N. Fuller, from Boonville, Calif., to Cloverdale, Calif.
Roy, David R., from 194 King St., to 16 Main St., N., Weston, Ont., Canada.
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Tohill, Gaylord E., from 367 Museum Drive, to 136 South Ave. 58, Los Angeles, Calif.
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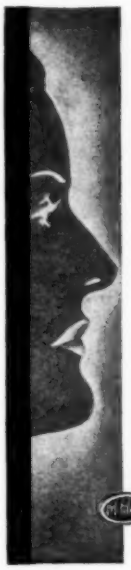

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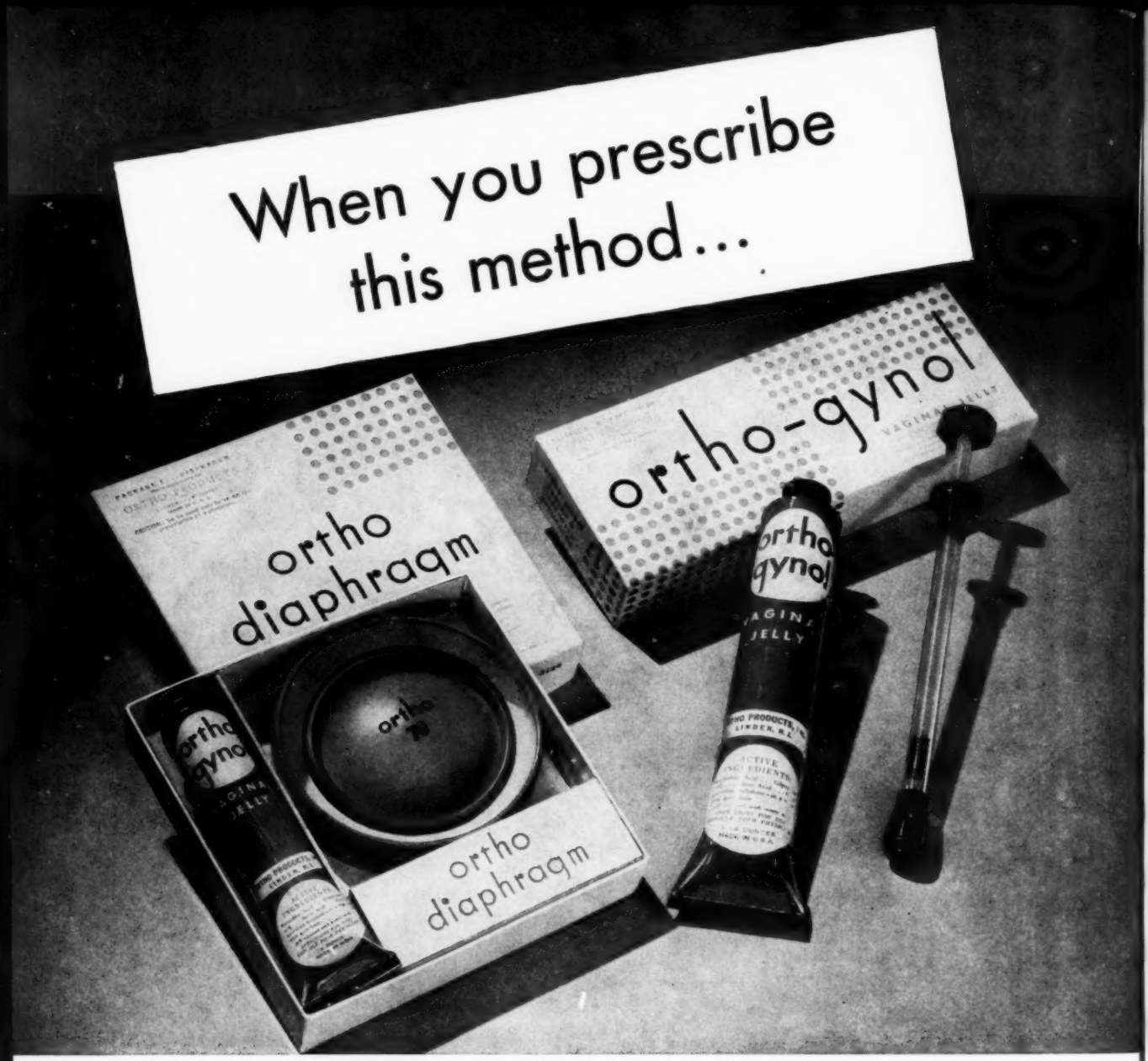

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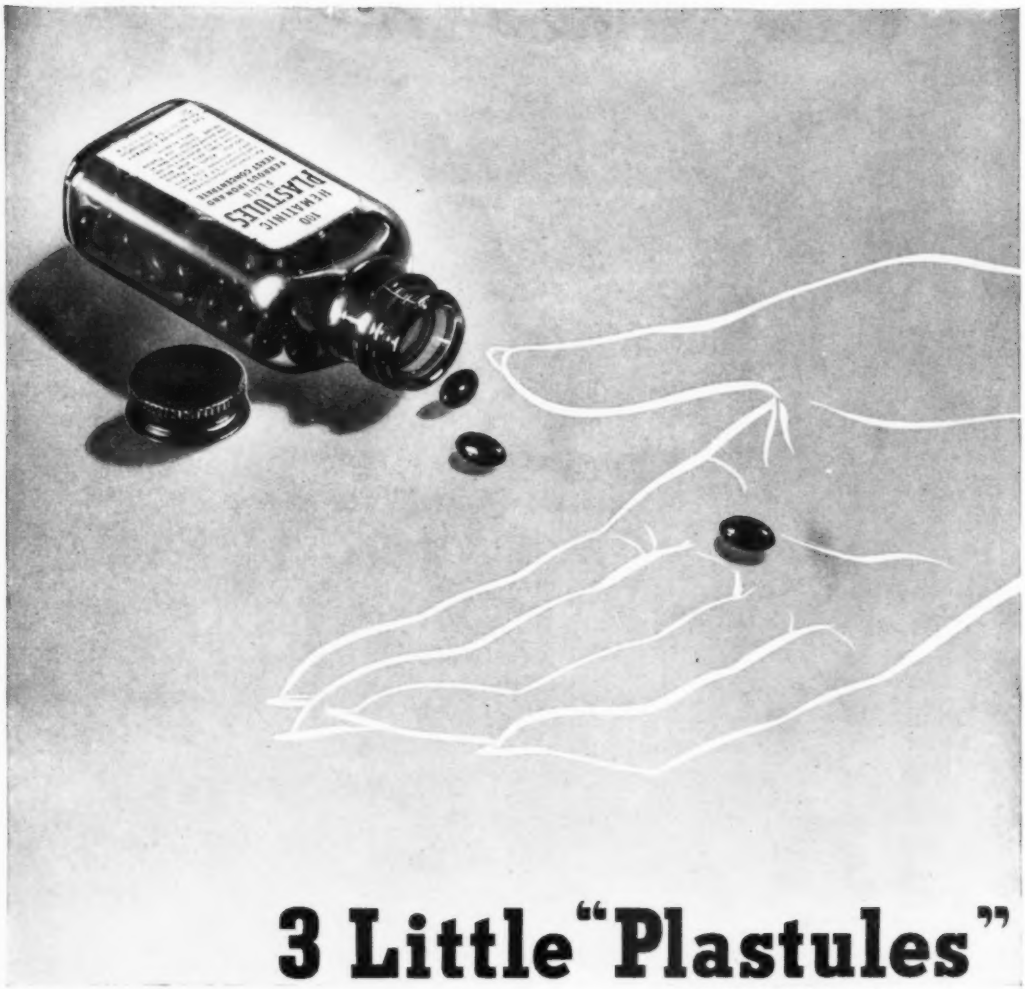

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